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The Problems of Backyard Poultry and Rabbits

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I am indeed honoured by your invitation to attend this meeting and even more by being entrusted with the task of opening a discussion on such an up-to-date subject as Backyard Poultry Keeping.

It is impossible to review every aspect of the subject and I have kept my paper on general lines to serve as a basis for discussion. I must apologise for the meagre treatment of the domestic rabbit as I have very little experience of this section, and my personal acquaintance is limited to the rabbits kept for experimental purposes at the faculty of Veterinary Science at Utrecht, but I have been assured that more competent authorities on this subject will be present to enlighten us.

The principle of rabbit keeping does not differ from that of other livestock. For a healthy industry rational breeding, a definite plan of sanitation and adequate nutrition is required. As I have already announced, I do not know sufficient about this branch to air my views. Two experiences, however, are perhaps worth mentioning. The first deals with a high mortality in winter time amongst Angora rabbits kept on a diet of hay, bread, bran, oats and a little ground nut cake. The *post-mortem* findings were non-specific pneumonia. This enzoötic was stopped by adding to the ration carrots and a small amount of salt (0·6 per cent.). Probable explanation of the losses was lack of carotene.

The second deals with breeding. Two expensive Flemish bucks costing £40 to £60 had been used for over six months and, although active in mating, never had fertilised a doe. Half a dozen experts had already tried their hand when my advice was asked. The bucks were well fed in very good, hard condition and lively. I injected a fairly strong dose of stilboestrol as, in my opinion, the descensus testiculorum had not taken place properly, and as the owner did not mind if my treatment proved fatal. Now I am blamed for excessively large litters, up to 20, and for very unscientific conduct, as I was told by the manufacturers that this injection ought not to have acted at all.

In dealing with the problems of the present-day backyarder, we are at a disadvantage compared with practitioners called in to advise the commercial poultry keeper. We have been brought up to treat the "poultry farm" as a unit, even if the various components are run by different people in widely separated localities. Breeding stock, hatching, rearing and the laying flock belong indivisibly together. Ailing birds are not in the first place individuals needing help but are representative of the general condition of the "flock."

Since the domestic poultry keeper does not keep his fowls solely for economic purposes, we are no longer dealing with a flock but with a number of individuals, each known by name and a detailed history of each is available from the time it arrived. In the majority of cases the really important part of the history of the birds is unknown, no tracing back to rearing, hatching, or breeding stock being possible.

After studying poultry diseases and poultry keeping for many years we have come to the conclusion that the root of most of our troubles is the breeder. The poultry keeper will not need a great deal of attention by the veterinarian when the breeder gets to understand his job properly.

This observation does not help us much when we look at half a dozen bedraggled hens in a muddy patch between the high walls of a backyard, and are asked to produce the eggs by an owner whose only qualifications are his enthusiasm and some half-digested generalities from a poultry book. However, a great adaptability to a wide range of conditions is the chief characteristic of the fowl and with a little guidance she will produce eggs and keep fit in a cage, in a shed as well as in a rough shelter in the middle of a field, and in every other conceivable place in between that is not consistently flooded. If we keep these few fundamental principles in mind we can find a solution for most of the problems that face us.

At present it is accepted that the rate of egg production is dependent on the level of anterior pituitary substance in the blood, the secretion of which is stimulated by light. Poultry keepers have applied this knowledge by artificial lighting of their hen houses in winter time. It was then found that the effect of a fixed period of light soon wears off and that a lower but increasing light ration will raise the production. How the individual responds to this stimulation depends on its hereditary make-up. One bird will produce 150 eggs a year under ideal conditions while another reaches the 300 level. Some individuals, without light, reach a winter egg production that others cannot attain with the strongest stimulation. We cannot advise at present the use of electric light but every other possible thing should be done to increase the amount of light, as the problem of winter egg production is a complicated one and the food consumption, also influenced by light, plays a great part.

A few additional windows at floor level and in the roof and whitewashing of the interior of the houses will make a great improvement. A hen house should face south so as to catch the greatest amount of light. In the suburbs this is usually possible. In small yards with high walls it is sometimes better to face north and have the walls of the yard white-washed and to use the reflected light. On some poultry farms houses with glass walls have given excellent results. The more light there is in a house the easier it is to keep it clean and light discourages the breeding of all external parasites as well.

Space is the next factor to consider. Fowls are not by inclination active. It is only in search of nourishment that they become the busy scratchers of the yard to which we are accustomed. Breeding pens need most room and since the State in Holland took over the control of the poultry industry, breeders are compelled to allow at least 15 square metres of land for every hen. Ordinary laying birds can do with little exercise and they are perfectly happy in a battery, each in a separate laying cage, and excellent results are obtained with this system, provided the food is adequate. There is also no need for large pens if space is limited and a small scratching shed with 1 square yard, or even less, per bird will do for the backyarder if properly managed.

Feather picking and cannibalism under these conditions indicate that something is wrong with the management. They may be due to a craving through lack of some essential ingredient in the food; a deficiency in fibre, calcium, protein and even shortage of water have been found responsible. More often it is caused through boredom when several birds have nothing to do between meals. Ample dry litter with some scratch food or a bunch of green food tied up within reach of the birds will stop it, if this vice has not yet become a habit. If one of the birds persists in it she can be separated for some days in a dark place, but if this fails it is wiser to dispose of the bird.

Bullying is another vice encountered in small pens. If several hens set upon one of their mates and keep her away from the food the best thing to do is to kill the victim as she will eventually go under. If one bird is the culprit, isolate her in a broody coop for a week. We must bear in mind also that feather eating and litter eating is a symptom of infectious entero-proventriculitis (a disease caused by a virus).

Air.—The sleeping quarters are a problem not always happily solved in the backyard. We must remember that size of the hut is not of such importance here as the speed with which the used air is replaced by fresh. A baffled air inlet at ground level and an air outlet above the heads of the perching fowls will make most night houses sufficiently well ventilated to do away with the continuous crop of common colds and other troubles due to lowered resistance, which depress the production and endanger the life of the birds.

However favourable the conditions under which the birds are kept, and however well bred they may be for stamina and winter egg production, we cannot expect any results unless the material means for producing the eggs are available. Many domestic poultry keepers are sadly lacking in an elementary knowledge of poultry rations, and in cases where serious diseases were suspected by the owner, I have been able to get the most spectacular results by simple alterations in the diet. The mismanagement of the feeding by backyarders is so great that I advise everybody called in for whatever reason to make a most exhaustive enquiry into this and not to be satisfied until every action during the working day is known. In one instance in which losses were sustained in the middle of the summer during a hot period, I found a bowl three-quarters full of clean water, four pullets standing quietly in the shade, another one running around in circles and a corpse lying beside an unlighted incinerator. Appearances were deceptice: in point of fact this provision of water and shade had been made just before my arrival. We put the ailing bird in a chicken coop, darkened and covered by a wet sack, and held a *post-mortem* examination on the dead bird, finding slight dust of

* Opening paper in discussion of this subject by the Central Veterinary Society at the meeting held at the Conway Hall, Red Lion Square, W.C.1, on November 5th, 1942.

urates on the heart and the ureters and kidneys congested with urates. The sick pullet was taken out and its crop filled with water with a syringe and rubber tube and put back in the cool darkness. Next day she had recovered. As to the value of the treatment, I could not tell you if this was a case of *post* or *propter*. I have come across several cases of sudden death of pullets in full lay before and they are in some way related to lack of water.

Nutrition

The effect of war-time feeding on our breeding stock becomes more and more apparent, in particular on some farms which are overstocked for their coupon allowance, where large amounts of potatoes and little mash have been fed. The birds look normal, the production is good but the former hardness has gone, and we notice more troubles than before amongst the young stock.

I have been much concerned this year about the high incidence of slipped tendon in young pullets up to three to four months old on commercial poultry farms as well as in backyards, a condition I have never met with before except in turkeys. Up till now manganese sulphate has proved effective. Curled toe disease and, amongst older chickens, acute paralysis, due to lack of vitamin B, is frequently encountered and has been cured and prevented successfully with dried yeast, milk powder and dehydrated grass.

In these days of food restrictions and penalties for misuse of food for human consumption it becomes more and more difficult to find out exactly what is being fed. On several occasions I have had to state bluntly, "I know from the condition of the birds you are feeding something else as well, and as I am not an Inspector for the Ministry of Food you might just as well tell me. Moreover, I am wasting my time if I don't get a correct answer to my question." The condition referred to is excess of abdominal fat; slightly enlarged, light-coloured, brittle livers due to fatty infiltration, and often death through rupture of the liver. The general condition of all birds is very good, but egg production in hens and older birds is low. This is due to a ration containing a high proportion of carbohydrates and deficient in protein. The condition was often seen before the war amongst farmyard poultry where the only feed was kibbled maize. As the backyard poultry keepers are very active scroungers it is amazing the variety of carbohydrate rich food they manage to obtain, but without which they would as a rule be much better off.

Time does not allow me to discuss thoroughly the principles of poultry feeding. Any practitioner, however, dealing with poultry should have a thorough knowledge of this subject and I can recommend Mr. Halnan's "The Scientific Principles of Poultry Feeding," Bull. No. 7, Ministry of Agriculture and Fisheries. I must, however, give a thumb-nail picture as otherwise my examples may not be clear.

The average consumption of a laying flock is 4½ oz. of dry food per day (ranging from below 4 oz. during moulting up to 5 oz. at the top of production). The level of protein in a complete ration must be between 16 and 17 per cent. The fibre, which should not be lower than 5 per cent., may reach 10 per cent. without materially depressing the carbohydrate utilisation. Oil to about 5 to 7 per cent. optimum may, however, be much higher for adult stock. The Ca : P ratio recommended is 2 : 1 with a P level of 0·8 per cent. Limestone grit or oyster shell must be available *ad lib.* In batteries calcium should be fed in mash at level of 2·5 per cent. In winter 1 per cent. of cod liver oil in the ration supplies vitamins A and D, while other vitamins present in normal rations are vitamin B group, vitamin E and vitamin K_2F. Birds require about 60 international units of vitamin D per 100-gramme ration and a minimum vitamin A requirement of 450 international units per 100 grammes. Flint grit must be given for efficient utilisation of food, and for the stimulation of the movements of gizzard and intestines. Clean water must be always available, specially first thing in the morning, as the birds drink most when they come off the perch. If houses are shut up at night and nobody gets up at daybreak to let the hens out, provide a water trough inside as well.

Most food available to the backyarders is of rather bulky nature, *i.e.*, it contains a high amount of moisture. This is shown by the percentage of dry matter in the following: potatoes, 22 to 25 per cent.; parsnips, 15 per cent.; Jerusalem artichokes, 20 per cent.; carrots, 13 per cent.; cabbage and kale, 11 to 15 per cent.; grass, 20 per cent., and white clover, 18·5 per cent.

Rations have to be adjusted on a dry matter basis and a short cut used extensively is: 4 lb. of potatoes equal 1 lb. barley meal, or 8 lb. of raw green vegetables and roots equal 1 lb. of dry food.

It is possible to feed birds on over 90 per cent. potatoes, in which case they will have to eat 12 oz. of potatoes per day and 2 oz. of dry mash specially balanced, high in fibre and high in protein. The birds will drink on top of this about ½ oz. of water per day, while on a dry mash ration they drink about 8 oz. per day (with variations due to season and production).

The backyarder as a rule does not allow sufficient for the water content of the food and the birds are under nourished. A bird can eat up to 14 oz. of such a ration per day containing 5 oz. dry matter—9 oz. water, but it takes some time to get to this level. It is therefore advisable to work at a total consumption up to 11 oz, which gives in practice the best results. In the long days of midsummer the birds have longer time to eat than in midwinter, when it takes experience and good management to make the birds consume sufficient of a similar ration to obtain a high production. It is advisable, therefore, to bring down the bulk of the ration in winter time by splitting the food into four meals instead of two.

The Government allows 2 oz. of balancer meal per head per day, containing about 19 per cent. protein. The rest of the ration, comprising the house scraps, potatoes, cabbage leaves, acorns, etc., is low in protein. Many rations made up on these lines examined by me gave an analysis of 13·5 per cent. protein. Meat and fish scraps, as well as home-grown beans and peas, can be used to raise the protein. These ingredients, however, are in short supply and I usually revert to two high protein ingredients at present coupon free, to adjust the ration to about 16 per cent. protein, *viz*, dried blood meal (85 to 90 per cent. protein) and dried yeast (about 45 per cent.). Both are, however, deficient in mineral matter and fibre; 50 per cent. dried blood, 30 per cent. dried yeast and 20 per cent. of a good mineral mixture is the ideal combination for our purpose. If 2 oz. of balancer meal is fed per head ¼ oz. of this mixture is sufficient. If 1 oz. of balancer is given ½ oz. of blood yeast and minerals will suffice.

An example of a ration made up for a backyarder in 1940 is as follows: 4 lb. meal, 4 lb. biscuit meal and dried bread crumbs, 2 lb. blood yeast minerals. Each bird received 1½ oz. of the mash together with a mixture of steamed potatoes and potato peelings 4 oz., and carrots 2 oz. As a scratch feed 1 oz. of dried acorns with a little gleaned corn. As a result of the change in feed a very low production of about 25 per cent. jumped up in a week's time to 60 per cent., and later increased to 70 per cent.

Potato rations are usually low in fibre and induce loose droppings which can be counteracted by oat husk meal containing up to 35 per cent. of fibre, dried grass meal 16 to 27 per cent. fibre, pine sawdust or charcoal. The action of charcoal is different as this contains no fibre, but it serves the purpose. I often find that neither limestone grit nor flint grit is available when visiting backyarders.

Food must be made attractive to the birds and sufficient trough space must be given to avoid crowding and fighting. The mixture should be crumbly and not pasty, finely mashed and mixed so that all the birds must take their share of all ingredients. Steamed potatoes can be given partly whole, preferably scattered in a grass run while still warm. This gives a change and takes the place of scratch feed in the afternoon. Green food can be given best in bunches tied up in the run but so that the birds can get at it without jumping. I have traced a number of cases of ruptured oviducts to high hanging greenstuff. Four birds died within a week, after the owner, who formerly threw his greenstuff in the run, had tied it up high on the advice of a poultry paper, to give exercise. No more deaths occurred after lowering the greenstuff.

As a last principle, the birds must be comfortable and happy to get maximum production. Dropping boards should be not more than 2 ft. from the ground, with perches at least 6 in. above them. Heavy breeds require as a minimum 10 in., and light breeds 8 in. perching space. A perch should be flat with rounded edges and 2 in. wide and here most backyarders are at fault. Very often we find them ¾ in. in diameter and entirely round, while the other extreme is 4 in. which does not allow for a grip; uncomfortable nights mean fewer eggs. There should be sufficient room to fly off the perch at an angle and not to drop straight downwards; otherwise ruptured oviducts and livers result. If sleeping quarters are separate from the scratching shed the perches should be from about 6 in. to 1 ft. from the floor. For wet days a dry place should be available.

Nest Boxes.—It is a peculiar thing, but the birds always try to lay in the same nest box. We often find four hens sitting on top of each other while several other nest boxes are empty. By taking out the divisions and making a communal affair of it we avoid overcrowding and many broken eggs. Nest boxes should be in a dark corner or the entrance half obscured by sacking and should be raised from the floor as well. This prevents egg eating. Raising the house 2 ft. above the ground level provides shade in summer, and a scratching shed on a wet day, thus eliminating the possibility of rats.

Finally, I wish to draw your attention to the fact that a subclinical infestation with parasites is very often the cause of poor condition and disappointing production. Coccidiosis, caecal as well as duodenal, is widespread. Very often the infection is in the houses and the pens. For instance, one backyarder bought 12 eight-week-old pullets from a farm where they were reared up to that age on wire netting in a fattening plant. Within ten days all had died from caecal coccidiosis. We touch here the root of most of the backyard troubles. The stock which is bought is very often not hardened enough to stand up to these more primitive conditions, while on the other hand numerous culls from poultry farms harbouring all possible diseases and parasites find their way to unsuspecting customers. The toll of diseases is

very high and here it is that the local practitioner can be of valuable assistance by diagnosing the trouble, curing what is curable, destroying birds that will not be productive and advising how to prevent a recurrence.

May I give you two typical cases :—

Case 1.—April, 1941, twelve pullets were bought about four months old. In May, one died from paralysis. In August, one died with swelling of eyes and comb ; another did not eat for several days and died on September 1st. In October, one moulted suddenly and dropped dead. In December, one losing condition : sent for *post-mortem* examination, the report was leucosis. In February, one developed paralysis and died. In March, one losing condition, was sent for *post-mortem* examination : it showed a heavy infestation with *Heterakis gallinarum* and extensive ulceration of the caecal tubes. Within eleven months eight out of twelve had died and production had been very disappointing. No accurate laying records were kept.

Case 2.—In May, 1942, twelve four-months-old R.I.R. pullets were bought from a reputable breeder. Five months later one had died and six were killed suffering from extensive tuberculosis of the intestinal tract, spleen, liver and bone marrow. The five remaining birds, which were in good condition, were tuberculin tested : one reacted. *Post-mortem* examination revealed two small lesions in the liver, one in the spleen, confirmed by microscopical examination.

In contrast here is a more promising picture. In September, 1940, eight pullets were bought on the point of lay. In September, 1941, seven were left and one had died from egg peritonitis. The total production this year was 1,936 eggs. The birds were kept through the second year, the moult lasting eight weeks. Up to September, 1942, the production was 1,510 eggs ; one more was lost during the year from egg peritonitis.

Analysis of 140 *Post-mortem* Reports of Backyard Poultry

	Main feature	Also present
Avian tuberculosis	10	—
Contagious catarrh	1	—
Listerellosis	1	—
Blackhead	1	—
Pneumonia	4	4
Colds (mucous in air passages)	—	11
Leucaemia	10	—
Neuro-lymphomatosis	8	—
Other tumours	13	—
Eimeria tenella	14	10
Other types *Eimeria*	13	7
Davaina proglottina	4	4
Railletina	—	3
Heterakis gallinae	4	22
Ascaridia lineata	7	9
Capillaria	—	9
Cystodites nudus (airsack mite)	1	1
Lice	—	6
Egg peritonitis	10	—
Invagination	1	—
Visceral gout	4	—
Fractured leg	1	—
Impaction crop	1	—
„ gizzard	4	3
„ intestines	1	—
Haemorrhage ruptured liver	4	—
„ ovary	3	1
„ crop	1	—
External haemorrhage	4	—
Phosphorus poisoning	2	—
Arsenic poisoning	1	—
Cacao shell bran poisoning	7	—
Rickets	—	4
No flint grit in gizzard	—	12
Insufficient flint grit	—	9
Excessive fat condition	—	13
Deformed breast bone	—	6
Retention of completed egg in middle of oviduct with shell four weeks after last egg was laid, ovary inactive, condition fair	1	—
No abnormal features	4	—

Commenting on this list, I wish to point out that the material came from a rather restricted area on the outskirts of London. Some of the *post-mortem* examinations were done by myself, others in various laboratories. Tuberculosis cases represent only the first bird examined from each place. From these cases of avian tuberculosis three could be traced back to the same breeder. This man was not aware that he had tuberculosis on his farm and appreciated the information. Typical is the fact that several pullets were found with extensive lesions, some only four and a half months old. I consider this high incidence of tuberculosis very serious and it would be interesting to know if other districts have the same experience. (No attempt was made to confirm the type.)

Another disease not recorded is fowl pox. Last winter many backyarders suffered badly and all birds should be vaccinated during summer and early autumn.

The incidence of impacted crops is very high but most cases were treated and recovered. They are due generally to long fibrous grass, raffia and such-like material. Sour crop is another typical backyard trouble easily cured by washing out the crop, giving slightly alkaline water and restricting the rations for some days. If impaction is due to neuro-lymphomatosis no cure is possible. It was to be expected that internal parasites would be numerous, but 43 major cases out of 140 is very high, while we find 64 in which they were present in addition to other complaints. This is an indication that great care must be taken by the backyarders in the management of the runs. If it is impossible to change the ground and to cultivate, and rest, the fouled runs we can ônly resort to two lines of action. The first is to change over from free run system to keeping the birds in batteries. The second is to treat the birds and adopt a well-planned sanitation. When we are chiefly dealing with worm infestation phenothiazine is a great standby. The American system of periodical dosing through the food is promising. In this country a large commercial farm with about 6,000 birds has been trying it out, so far with good success. Before using this drug it was necessary to treat all the stock at least three times per year with capsules. The dose used is 2 lb. of phenothiazine per ton of mash given continuously for two weeks. Afterwards, where reinfestation is likely to occur, the drug should be given at the rate of 5 lb. per ton once weekly or with two weeks' interval for one day. Turkey breeders are very pleased with this system.

Coccidiosis is a different problem. If six-months-old strong hardened pullets are bought and the usual hygienic measures are taken, little trouble is experienced where before losses were heavy.

The four cases of death through external haemorrhage were all White Leghorns, and it is probable that a hereditary factor is involved here. The State Serum Institute in Holland once reported to this effect.

External parasites are more numerous than shown in this list and it should become a matter of routine to inspect the birds and to detect an invasion of red mites by inspecting the houses.

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II : R. F. GORDON

Dr. Bakker has dealt so adequately with the management and feeding of backyard poultry, that I will confine my remarks to the disease side of the problem.

As Dr. Bakker points out, the domestic poultry keeper presents a new problem to poultry pathologists, who have been accustomed to dealing with large flocks where the preservation of the health of the flock as a whole is more important than that of the individual bird. The domestic poultry keeper, on the other hand, is more interested in treatment and is usually very loath to kill a fowl for diagnostic purposes. In the absence of such *post-mortem* material the clinician is often more favourably placed than the laboratory. Quite apart from this feature, the diseases of backyard poultry are of a different type from those met with on large poultry farms. The acute infectious conditions are seldom encountered and disease is usually a sequel to bad husbandry, or a legacy from the vendor. I am very interested in the lists of the conditions Dr. Bakker has described and although I have not attempted to classify our *post-mortem* records they compare closely with his findings. Dr. Bakker has discussed a number of these conditions in the course of his paper, but there are one or two additional points to which I would like to draw your attention.

One of the commoner diseases in backyard poultry is breakdown of the reproductive system in the form of egg peritonitis due to rupture of the ovary, or as a sequel to impaction of the oviduct. It is usually attributed either to forced feeding, rough handling of the bird, or to the use of too high perches. We have noticed, however, that in many cases of egg peritonitis the ovaries have shown typical degeneration of the type found in carriers of pullorum disease, and on culture *S. pullorum* has been isolated from these degenerate ova. I would hesitate to suggest, because of this, that all domestic poultry keepers should blood test their stock, but they should at least ascertain that purchased pullets came from a blood tested source. It is also important to remember that pullorum carriers invariably show lowered egg production and that infection from adult to adult can occur, particularly in small runs. It is probable that the domestic poultry keeper has been a fruitful market for the disposal of pullorum reactors by unscrupulous dealers.

Duodenal coccidiosis is probably the most difficult disease to deal with amongst backyard poultry, owing to the difficulty in obtaining fresh ground for the non-affected birds. It is important to remember that the coccidial oöcyst must undergo a sporulation period of from 2 to 14 days, according to conditions of temperature and humidity, before it can infect a new host or reinfect the original host. Advantage can be taken of this fact by daily removal of the litter and droppings and regular cleansing and disinfection of the floör and dropping boards. It has recently been shown at Weybridge that the most efficient disinfection against the highly resistant coccidial oöcysts is a 10 per cent. aqueous solution of household ammonia, which should be allowed to act for at least two hours before the birds are replaced in the houses. Sporulation is encouraged by a moist, warm atmosphere, and houses should be dry and well ventilated. Drinking troughs should be moved frequently to prevent damp areas occurring, and both food and water containers should be scalded daily. If fresh ground is not available the top spit can be removed from the run and should be replaced by fresh soil from another part of the garden.

Owing to the insanitary conditions under which backyard poultry are often kept, both internal and external parasites are fairly common. Phenothiazine in a dose of 1 gramme per bird is highly efficient in the removal of *H. gallinae*, the caecal worm. This parasite is present

in most fowls and severe infestations are rare. It is of interest to note that recent work in America has shown that this drug is of great value in the control of blackhead in turkeys, owing to its high efficiency in removing caecal worms, an important factor in the transmission of that disease. Tapeworms, particularly the small tapeworm *davainea proglottina*, are frequently seen in heavy infestations, associated with a severe catarrhal enteritis. Treatment with anthelmintics such as kamala in a dose of 1 gramme in pill or capsule form has been advocated but gives variable results, and better results will be obtained by the control of the intermediate hosts, slugs and snails by treatment of the run with copper sulphate.

The large roundworm, *ascaris galli*, is also seen in large numbers and can cause lowered egg production and loss of condition. Individual dosing with carbon tetrachloride in 2 to 4 c.c. capsules is fairly efficient. All anthelmintics to some extent interfere with egg production, and wholesale dosing of birds is not advisable unless the infestation is severe ; it is better to direct the owner's efforts towards improvements in hygiene and housing.

These same insanitary conditions together with poor nutrition predispose towards external parasitic infestations, which are fairly common in backyard fowls.

Sodium fluoride, used either as a dusting powder or as a dip composed of 1 to 1½ oz. to a gallon of water, is effective in the treatment of lice. It is well to remember that the drug is an irritant to the human skin, and the operator should wear gloves, and should not hold the fowl between his knees. It has been superseded to some extent by the use of 40 per cent. nicotine sulphate. This is painted on the perches shortly before the birds go to roost and the heat causes it to vaporise. In addition to destroying the lice, it kills most but not all of the nits, and should be repeated in three days' time. Owners should be warned of the extremely poisonous nature of nicotine sulphate, and ample ventilation must be provided in the fowl house. It is particularly dangerous in the presence of lime, and should not be used in recently white-washed houses.

The red fowl mite is extremely injurious to poultry and can be found in abundance in dark, dirty poultry houses. This parasite feeds only at night, and through the day is mostly found in the nest boxes and on the perches. Although dusting with sodium fluoride is helpful, proper control can be carried out only by regular disinfection of the houses, particular attention being paid to the nest boxes and perches which should, if possible, be movable.

The most efficient disinfectant for houses infested with external parasites is an emulsion composed of three parts soft soap and 15 parts hot water into which is stirred 70 to 100 parts of paraffin. One part of this stock emulsion is added to 20 parts of water and can be used as a wash or spray.

Lymphomatosis—*i.e.*, fowl paralysis and its allied disorders, lymphomatous tumours and certain forms of leucaemia—is fairly common in backyard poultry. The incidence of this disease (which a year or two ago was the most serious cause of loss to the industry) appears to have been considerably reduced since the war. This is probably due to the severe culling which has taken place in most of the breeding flocks in the country. There is no treatment of value, and the only advice we can offer domestic poultry keepers is to kill affected birds for consumption immediately symptoms of paralysis are observed. Affected birds rapidly lose condition and very quickly become a total loss. The incidence of the disease in backyard flocks is seldom high, but in view of recent work regarding the infectious nature of the disease, disinfection and, if possible, movement to fresh ground should be advocated. Although breeding is seldom carried out by backyarders the possibility of a hereditary factor being involved should be kept in mind, and strains of birds in which the disease is known to occur should not be used for breeding purposes.

Colds and contagious catarrh are usually associated with damp, badly ventilated houses, and overcrowding. With attention to these details the condition tends to clear up, and the isolation of affected birds reduces the overcrowding. Spraying over the birds when in the house with fine mist sprays of eucalyptus, or other mild antiseptic solution, has been advocated, and recently American workers have claimed a high efficiency for sulphathiozole in the treatment and prevention of catarrh. The dose recommended is 0·5 to 1 gramme to each 30 grammes of mash.

It is most important to differentiate this disease from the oculonasal form of fowl pox, and to remember that fowl pox vaccines are not of value for the prevention of contagious catarrh. In fowl pox a clinical examination of the flock is certain to reveal birds showing typical pox lesions of the comb, face or wattles, or of diphtheritic lesions in the mouth. Pox lesions are firmly adherent and leave a raw ulcerating surface, while in contagious catarrh, the inspissated casts of pus found in the mouth and eyes are quite loose and easily removed. The disease can also be distinguished from nutritional roup (avitaminosis A) by the presence of multiple small pustules in the oesophagus and gullet.

Visceral gout, fatty liver, and the other nutritional disorders have been adequately dealt with by Dr. Bakker. Tuberculosis has been encountered fairly frequently but not in the high incidence described by him. The tuberculin test can be very usefully applied but is only of value if fresh ground can be provided for the non-reactors. If this is impossible it should be remembered that the heaviest infection is immediately round the house and food troughs, and the soil in these areas should be removed, and replaced by fresh soil or cinders. Even then, with fixed houses and small runs, fresh cases are almost certain to occur.

Poisoning is not uncommon in backyard poultry and recently we have encountered some 20 outbreaks of poisoning by cocoa waste products, the active principle of which is theobromine. Woodman, in *The Journal of Agriculture* of June, 1940, states that "Theobromine is cumulative in its effect and even in concentrations of 10 per cent. of the ration it has an adverse effect on health and egg production, and cannot be recommended as a foodstuff for poultry either 'straight' or in compound form." We ourselves have carried out a small feeding experiment and have found cocoa husk meal to be highly toxic when fed in large quantities. Birds fed on a mash containing 50 per cent. cocoa husk died after one feed, those on 25 per cent. after three feeds, and those on 5 per cent. after three to four weeks, following rapid loss of condition. Even when fed in quite low proportions in the ration fatalities occurred as, owing to the finely divided nature of the material, it is extremely difficult to mix thoroughly in the mash and tends to cake in lumps ; thus certain birds receive fatal doses. Symptoms are not usually noticed, the birds being found dead. On *post-mortem* examination there is invariably an acute congestion of the heart, liver and lungs. The crop and oesophagus appear distended and filled with a mass of dark brown undigested food, which may even extend into the mouth and beak, suggesting acute paralysis of the alimentary tract. The intestinal contents smell strongly of cocoa.

Phosphorus poisoning, usually due to the use of rat poisons, is also fairly common, poultry being particularly susceptible. It is easily diagnosed, the fumes being readily seen when the gizzard and crop are newly opened, and there is a characteristic smell of damp matches.

We have only encountered a few cases of fowl pox and infectious laryngotracheitis, but in one of the outbreaks of the latter, the disease spread to four other backyard flocks in the same street. In a number of the outbreaks of both diseases there is little doubt that infection originated by the unloading on unsuspecting domestic poultry keepers of in-contact birds, or birds in the incubative stages of the disease, by unscrupulous dealers. Many of the outbreaks occurred in newly purchased birds, and well within the incubative period of the disease. For this reason domestic poultry keepers should be discouraged from buying stock from unknown dealers, pet stores, or from advertisements other than those in reliable poultry papers. The poultry press has attempted to protect purchasers by means of a black list of certain advertisers, but we can also help by advising reputable sources for the purchase of new stock. For this purpose I would suggest that you will find the Register of Accredited Poultry Breeding Stations extremely useful. It can be obtained from the Ministry of Agriculture, 23-25, Soho Square, and contains an index of the names and addresses of all accredited breeders, and the breeds and type of stock for which they are accredited. These stations are now under veterinary supervision. Lists of the breeders who have been approved for extra rations by the county poultry panels (on which there is also veterinary representation) can be obtained from the county agricultural war executive committees.

Another scheme to which I would like to draw your attention is the Domestic Poultry Keepers' Council which is doing some excellent work in the husbandry side. The Council has a number of full-time area organisers and they in their turn have voluntary sub-organisers who are usually experienced poultry farmers. The main object of the scheme is to form local poultry and rabbit clubs, to organise lectures and demonstrations, and to advise generally on housing, feeding and purchase of stock. Most beginners would be well advised to get in touch with their local organiser. They have published four excellent leaflets on the management of backyard poultry and rabbits, these being obtainable from the D.P.K.C., 55, Whitehall, London. They contain valuable practical information and are easily understandable by the beginner. The addresses of the area organisers are given on the back of Leaflet No. 1.

Dr. Bakker has carefully steered clear of rabbit problems and I only wish I had the courage to do the same. Again I would like to confine my remarks to disease, and I hope that others better qualified than myself will tackle the husbandry side of this problem in the discussion.

There is almost a complete lack of reliable information on rabbit pathology, and it is difficult to assess the incidence of the various diseases or their relative importance. The diseases I wish briefly to describe are selected from our *post-mortem* records and their importance stressed according to the frequency with which we have encountered them.

Undoubtedly the commonest disease is coccidiosis, of which there

are two forms in the rabbit—the hepatic form caused by *E. steidae* and the intestinal form caused by *E. perforans*. As in the fowl, the organisms are host specific. Carriers are common, and on *post-mortem* examination coccidia can be found in most adult rabbits. Again the oöcyst requires a sporulation period outside the host of 2 to 16 days before it is again infective, and similar advantage can be taken of this fact to carry out daily cleansing and removal of litter. An even better method is the use of wire floors with sliding trays underneath, or the use of the morant system of housing when the pens can be moved daily, although in this method of management there is always the danger that the ground may have been contaminated by wild rabbits.

Water and food containers should be raised above the floor of the hutch to prevent contamination with faeces. A 10 per cent. aqueous solution of ammonia is again the most efficient disinfectant. The disease may be introduced by food grown on ground manured by rabbit faeces or contaminated by wild rabbits, or by the use of infected second-hand hutches or utensils. Since adults are frequently carriers, young stock must be isolated from older rabbits as soon as possible and overcrowding avoided. In young rabbits the symptoms are usually acute, and death may occur in two to three days without apparent ill health. In less acute cases there is dullness and ravenous appetite followed by rapid emaciation. There is usually diarrhoea followed by coma or convulsions immediately before death. On *post-mortem* examination the liver shows multiple pin-point, whitish areas, and the bile ducts may be thickened and appear as irregular white streaks. Microscopical examination of smears shows masses of oöcysts present in these nodules and in the bile ducts and gall bladders. In the intestinal from the wall of the small intestine is thickened and corrugated and may show multiple small white nodules.

The second commonest condition we have encountered is a disease at present under investigation at Weybridge. So far the cause has not been established but it is certainly not bacterial in origin, and may possibly be due to a filtrable virus since in many cases it would appear to be infectious.

The disease was first brought to our notice some twelve months ago, and since then we have encountered over 200 outbreaks. The mortality varies enormously from a few rabbits to, in some cases, more than 100 young animals, depending on the number of litters involved. Usually, once the disease shows itself in a litter the whole litter is lost. The disease affects rabbits from between two and twelve weeks of age and is commonest about weaning time. As a rule the does of affected litters and bucks with which they were mated remain normal.

There are usually no premonitory symptoms, rabbits simply being found dead, or occasionally showing paralytic or convulsive symptoms for a few hours before death. Some owners state that affected rabbits cry out before death, and that the head is bent back rigidly towards the spine. On *post-mortem* examination all organs appear normal and so far the exact pathological process concerned has not been found. Coccidiosis can apparently co-exist but does not appear to be the primary cause, and many outbreaks fail to show any coccidia present.

Tuberculosis is probably the next most common disease and requires little comment. There are two forms. One is an acute miliary type of infection in which death may occur three or four days after symptoms of laboured respiration, and obvious distress, but with no marked loss of condition. In this form multiple small white tubercles are found scattered throughout the lungs, liver, spleen and kidneys.

The chronic form shows the usual progressive loss of weight and emaciation. On *post-mortem* examination the lungs are usually the only organs involved when there is often complete consolidation with little normal tissue remaining, the lesions appearing as large grey-white areas of caseation.

Although we have as yet no definite evidence it is our opinion that it is usually the bovine strain of the tubercle bacillus which is involved. The tuberculin test is, of course, widely used experimentally in typing the strains of the tubercle bacillus, and might be of practical value in the case of valuable breeding stock.

Pseudo-tuberculosis caused by the *pasteurella pseudo-tuberculosis rodentium* has been observed on a number of occasions. Clinically and pathologically it closely resembles tuberculosis, and can only be differentiated culturally and microscopically. The disease runs a chronic course of three to four weeks with progressive weakness and emaciation and on *post-mortem* examination typical tubercle-like nodules are found in the lungs, liver, spleen and kidneys.

Snuffles or contagious catarrh is referred to as one of the commonest and most serious diseases of rabbits, but I have not yet seen an epidemic. Whether this is a true indication of the present rarity of the condition or whether it is due to the fact that the disease is so well recognised by breeders that carcases are not sent for examination, is difficult to say.

The other infectious conditions such as Schmorls' disease (an ulcerative condition of the face caused by *fusiformis necrophorus*), strangles, rabbit syphilis or vent disease, salmonella infections and haemorrhagic septicaemia, are apparently comparatively rare in this country.

Mange can be extremely serious and can spread with rapidity throughout a rabbitry. There are two forms, ear mange or canker, caused by *psoroptes communis cuniculi* or *chorioptes cuniculi*, and the more serious body mange caused by *sarcoptes cuniculi* and *notoedres cuniculi*. The disease closely resembles mange in the dog, and responds to the same treatment. Owing to the rapidity of its spread it is doubtful if treatment can be recommended for body mange and it is often more economical to advise slaughter, cremation of carcases and bedding, and disinfection.

With the exception of tapeworm cysts intestinal parasites do not appear to be of much pathogenic importance. There are two forms of tapeworm cysts, *cysticercus pisiformis* which appears as multiple watery-like blebs on the liver, peritoneum and mesentery, and *coenurus serialis* which occurs in the subcutaneous tissues of the neck and shoulder region. Both are the larval forms of adult tapeworms of the dog.

The non-specific diseases most commonly seen in rabbits are those due to dietetic errors, such as pot belly, wool balls (mostly seen in long-haired breeds such as Angoras), sore hocks, a condition usually associated with close confinement under insanitary conditions, mammitis and pneumonia. We have also seen volvulus, intussusception and, on two occasions, fracture of both hind legs above the stifle joint. The reason for this latter condition was not ascertained, the history simply being that the animals were found lying in the hutches showing paralysis of the hind limbs.

As in backyard poultry, the control of the rabbit diseases is mainly a question of hygienic housing and reasonable feeding. Hutches should be dry, light and well ventilated, and if possible so constructed as to allow faecal pellets and urine to drop through the bottom into a movable tray, which should be emptied daily and disinfected regularly. Food and water containers should be earthenware and should be raised above the floor level. Rabbit manure should never be used on ground where rabbit foodstuffs are grown. Dogs should either be precluded or kept free from tapeworms. Young stock should be weaned as soon as possible, and kept well separated from mature animals.

* * * * *

III : Disease among Poultry and Rabbits of Amateurs during War

TOM HARE AND A. B. ORR

During the two years of war, October 1st, 1940, to September 30th, 1942, we investigated 589 outbreaks of disease among the stock of amateur poultry keepers ; our diagnosis of the causes is summarised in Table I, group A. For comparison we have summarised (Table I, group B) the cause of disease in every member of a pedigree flock which died or was destroyed during the five years October 1st, 1936, to September 30th, 1941. (*Tables overleaf*).

Fowl paralysis remains a serious problem, though with experienced breeders we believe it to be less serious than in the early 'thirties. Believing fowl paralysis to be inherited we kept full records of the ancestry and breeding of the pedigree stock tabulated under group B. Solely by selective breeding the incidence of the disease had declined to a very low percentage in 1940-1 ; so far no case has been found in stock bred during the spring of 1942. The figure of 24·8 per cent. is the mean of five years and an index of the severity of the disease in 1936. Whatever excitatory or contributory effect may be exerted on the disease by a virus we firmly believe that in the application of selective breeding we have a practicable method of control and eradication of fowl paralysis. Until pedigree breeders have done this, professional egg-producers and amateurs will have to write off between 10 and 20 per cent. of their purchases as fowl paralysis cases.

The absence of disease due to defective nutrition in group B fowls is to be expected of the more eminent among the professionals. We regard the low figure in group A as not only a testimony to the amateur's ability but also to the adequacy for mature birds of our war-time dietary of household scraps and balancer meal. We think there is some support for this conclusion in the figures for morbidity, under which term we have classified the systemic effects of parasitic and nutritional causes. Among fowls and laying strains of ducks the figures for morbidity represent a very serious loss. But we must recognise that such losses are borne equally by professional and amateur, and that most of them represent the price paid for demanding sustained egg production of the hen.

Most cases of chemical poisoning can be attributed to the owner's neglect or ignorance. Salt poisoning (sodium chloride), of which we have five examples in fowls and one in ducks, is commonly due to feeding salted vegetables (*e.g.*, pickled beans) or the water in which ham has been cooked. Our list includes eleven examples of poisoning by phosphorus. It excludes poisoning by " salvaged " foodstuffs,

TABLE I

Showing under Group A the outbreaks of disease among amateurs' poultry for the two years 1940-42 *and under Group B the post-mortem results of every fowl in a pedigree flock, which died or was destroyed during the five years* 1936-41

Note.—In Group A the figures refer to outbreaks, in Group B they refer to individual fowls. Chicks under 12 *weeks of age are excluded*

Cause of Disease	Group A—598 Outbreaks											Group B	
	Ducks	Goose	Total	Per cent.	Pea-fowl	Turkey	Guinea-fowl	Bantam	Fowl	Total	Per cent.	Total	Per cent.
Parasites													
Pox	—	—	—		—	1	—	—	6	7		—	
Pasteurellosis	3	—	3		—	—	1	—	2	3		—	
Listerellosis	—	—	—		—	—	—	—	1	1		—	
Salmonellosis	10	1	11	23·6	—	—	—	—	1	1	11·2	—	2·0
H. parainfluenzae	1	—	1		—	1	—	—	1	2		6	
Tuberculosis	5	—	5		—	—	—	—	41	41		3	
Fungi	1	—	1		—	—	—	—	1	1		—	
Histomoniasis	—	—	—	9·0	13	13	—	—	3	29	24·6	—	21·5
Coccidiosis	8	—	8		3	6	—	4	81	94		100	
Ascariasis	2	4	6		—	—	—	1	32	33		56	
Capillariasis	13	—	13		1	—	1	3	47	52		51	
Trichostrongylus	1	4	5		—	1	—	—	—	1		—	
Nodular typhlitis	—	—	—	35·9	—	—	—	1	5	6	19·8	1	28·6
Syngamiasis	2	—	2		1	2	—	—	—	3		—	
Trematodes	1	—	1		—	—	—	—	—	—		—	
Cestodes	5	—	5		—	—	—	—	4	4		25	
Red mites	—	—	—		—	—	—	—	3	3		1	
Air-sac mites	—	—	—	Nil	—	—	—	3	4	7	2·2	3	0·9
Scabies	—	—	—		—	—	—	—	1	1		—	
Poisons	7	2	9	10·1	—	—	—	4	11	15	3·0	—	—
Nutrition													
Rickets	—	—	—	2·2	—	—	—	—	2	2	0·6	—	Nil
A-Avitaminosis	—	—	—		—	—	—	—	1	1		—	
Starvation	2	—	2		—	—	—	—	—	—		—	
Physical													
Injuries, etc.	2	—	2	2·2	—	1	—	—	6	7	1·4	6	1·3
Morbidity													
Nephritis	6	—	6	11·2	—	—	—	1	5	6	20·2	20	20·9
Fatty liver	1	—	1		—	—	—	—	33	33		12	
"Egg peritonitis"	3	—	3		—	—	1	2	59	62		65	
Intrinsic Factors													
Fowl paralysis	—	—	—	Nil	—	—	—	1	78	79	16·2	115	24·8
Neoplasia	—	—	—		—	—	—	2	—	2		—	
Not diagnosed	4	1	5	5·6	—	—	—	—	4	4	0·8	—	Nil
Totals	77	12	89		18	25	3	22	432	500		464	

e.g., cocoa-husk meal, which are usually purchased in quantity by professionals.

More than half the loss among poultry is due to parasites. Microbes (viruses, bacteria, fungi), save for chance epidemics, are not of serious account on the well-conducted professional farms, where quarantine, isolation and the searching out and culling of carriers are better understood. Much of this advance in the professional's husbandry may be attributed to his appreciation of the value of blood testing for B.W.D. and vaccinating against pox. But we must never underestimate the potential danger from contagious microbes even to the best-conducted farms. Those of us having experience of the heavy mortality produced by epidemics of pasteurellosis (cholera) on large duck farms realise that there is room for considerable improvement in dealing with endemic zones, in further study of vaccination and in stopping the trading of "culled" birds. In my opinion insurance is a far more promising weapon against the slink trade than bureaucratic control of markets and dealers. Avian tuberculosis is *urbi et orbi*. Among amateurs' poultry a high proportion of tuberculosis is introduced by purchased "culls."

Bowel parasites (coccidiosis and worms) are "enemy number one" of poultry; not only are they the direct cause of half the total of disease, but they contribute to the loss due to morbidity (egg-peritonitis and nephritis). Treatment of infected poultry would be facilitated if drugs were available which were lethal for the parasites in the bowel without being injurious to the patient. Our practice is to prescribe alleviatives, *viz.*, a saturated watery solution of lactose in place of drinking water for coccidiosis, nicotine sulphate and extract of kamala for worms. The birds under treatment should be housed on sawdust for not less than two weeks and each day their dung and litter should be removed and burned. At least once per week the interior of the house including all its fittings should be thoroughly scrubbed out with hot water and washing soda.

Poultry keepers require instruction in sanitary housing; for the amateur the intensive house or laying-battery are better than the garden pen. The essential preventives of bowel parasites are dung testing and dung disposal. The ideal is to examine microscopically the dung of each newly purchased bird before it is liberated into the clean accommodation. While practicable for the small flocks of amateurs it is too expensive in labour and fees for the professional. On breeding farms it is practicable to test samples from batteries before the young stock is transferred to the rearing fields and again preceding their admission to laying units. Land (of farm or garden) infected with these bowel parasites must be kept free from poultry for at least two years, which means the institution of crop rotation. Thus the importance of removing the dung of infected poultry each day, burning it or leaving it to rot in a pit for at least two years before using it as muck for the land or garden.

Coccidiosis and worms caused about nine-tenths of the outbreaks of disease among domestic rabbits which we investigated during the two years October 1st, 1940, to September 30th, 1942 (Table II). The source of many of these outbreaks was traced to "carrier" does which had been purchased from advertised rabbitries. On testing the dung of 178 in-contact adult breeders we found 82 with coccidiosis only, nine with stomach-worm only and four with coccidiosis combined with stomach-worm. Thus it would appear that purchasers of breeding stock to-day have an even chance of buying in bowel parasites. As in the case of poultry the dung-testing of new purchases and the management of the rabbitry on sanitary principles are essential preventive measures. The figures are sufficient commentary on the state of the rabbit industry of this country.

TABLE II

Showing the Cause of Outbreaks of Disease among Domesticated Rabbits on 127 *premises and Wild Rabbits and Hares on* 27 *estates*

Cause of Disease	Domesticated Rabbits		Wild Rabbits and Hares	
	Number	Percentage	Number	Percentage
Parasites				
Pasteurellosis	4		—	
Tuberculosis	2	4·7	—	7·4
Staphylococcus	—		2	
Coccidiosis	97	76·5	5	18·5
Graphidium strigosum	16	13·4	12	44·4
Trichostrongylosis	1		—	
Scabies	—		2	
Physical				
Injuries	—		1	
Malformations	2		4	
Morbidity				
Fatty liver	1		—	
Intrinsic Factors				
Neoplasia	2		1	
Not diagnosed	2		—	
Totals	127		27	

Discussion

Mr. R. O. Muir: I have joined in this discussion, not because I have any valuable contribution to make to it (indeed, my acquaintance with diseases of rabbits, apart from intercurrent disease in experimental rabbits, dates from about a year ago), but because I wish to hear the opinion of clinicians regarding a disease of rabbits, apparently epidemic in nature, which cannot be pinned down as being due to any of the recognised causes of rabbit disease. I should like to obtain information particularly about the epidemiology, the clinical picture and the contagious features or otherwise of the disease and if possible to arrange collaboration with veterinarians, who are at present encountering it with a view to trying out tentative therapeutic treatment.

In the autumn of 1941, presumably as the result of an article in one of the popular weekly papers, there was a remarkable increase in the number of rabbits (chiefly young rabbits) received for *post-mortem* examination by the Poultry Diagnosis Department at Weybridge (here I am actually quoting information passed to me by Mr. Gordon). After failure to implicate a bacterium by microscopic and cultural methods and since the majority of the rabbits showed (in the opinion of Mr. Horton-Smith, who is engaged in research work on coccidiosis in poultry and rabbits) insufficient lesions of either hepatic or intestinal coccidiosis to justify a diagnosis of either disease, several of the more wholesome carcases were presented to me for confirmatory bacteriological examination and biological examination for the presence of a virus.

Careful consideration of *post-mortem* data and histories from my own records and from those of the Poultry Diagnosis Department, together with the results of investigation of several outbreaks of this rabbit disease in the locality of the laboratory, suggested that the condition was of infectious or possibly dietary origin and that rabbits from 2 to 12 weeks were most susceptible. Mortality was very high amongst suckling rabbits, whilst after weaning a varying proportion of the rabbits survived in a stunted condition. Most of these died before reaching maturity and the exceptions reached full-grown size several months after the normal age for that particular breed. The disease was widespread throughout Middlesex, Surrey, Sussex and Kent, with outbreaks on a smaller scale in the surrounding counties. Our *post-mortem* statistics, however, may be misleading with regard to the more distant counties, since rabbit owners at some distance from the laboratory are probably less inclined to send rabbits for *post-mortem* examination. The histories of certain outbreaks in Surrey and Sussex suggested very definitely that the disease was of a contagious nature. Although the parents of affected litters generally remain in apparent good health, in a few instances the parent buck or doe or both have died before or after the disease was observed in the litter.

Unfortunately, the clinical picture of the disease has had to be compounded mainly from the descriptions given by the owners of affected rabbitries and as details of these have been entirely conflicting in many cases, it has proved very difficult to form a reasonably coherent account of its characteristic clinical features. However, most owners have agreed that suckling rabbits showed no abnormality either in appearance or behaviour until the day previous to death, when listlessness and inappetence supervened. Abdominal swelling has been commonly described in three- to six-month-old rabbits dying of the disease. From personal observation of the litters of five does which had previously lost one or more litters from this disease by the same buck, it appeared that all the litters throve normally for five weeks. Then the rabbits in three litters showed loss in weight up to five ounces in a week and 17 died out of 21 within a week of onset of loss in weight. During that week, affected rabbits showed neither febrile reaction nor inappetence, although they appeared less active than usual. Survivors from these three litters, as well as the rabbits in the other two litters, showed loss in weight or checks in weight gain at intervals of two to six weeks. One rabbit died from each of the other two litters at four and five and a half months respectively. At six months of age, two of the surviving rabbits were only half the average weight of the others and all were under weight for their age, although otherwise apparently normal.

In suckling rabbits, *post-mortem* lesions have been conspicuous by their absence. In the majority, the gall-bladder showed great distension and the bile contained abundant epithelial debris from the bile ducts. The contents of the small intestine and rectum were usually mucoid but there was no definite enteritis. Renal enlargement was an inconstant finding. In rabbits from weaning to the adult stage, a varying degree of gastro-intestinal tympany was present, visible even shortly after death. Other frequent but inconstant *post-mortem* lesions were hydroperitoneum with portal congestion, patches of localised peritonitis, gastric haemorrhages, deep and superficial pin-head white nodules in the liver, and superficial renal haemorrhages but more frequently erosions of the capsule. A variable degree of hepatic and intestinal coccidiosis was observed but rarely of significant severity.

Negative results were uniformly obtained from bacteriological examination of organs, tissue fluids and excretions of affected rabbits by aerobic and anaerobic culture on ordinary and selective media.

Transmission attempts were made in two- to three-month-old rabbits by the administration of pooled organ suspensions, ascertained to be bacteriologically sterile, by various routes; 25 and 50 per cent. respectively of 108 young rabbits, to which the disease was apparently transmitted by oral or intranasal administration and by contact respectively, died after an interval varying from three days to several months, but attempted transmission in 30 rabbits by other routes was invariably negative. Unfortunately, since several young rabbits from the same stock, from which the experimental rabbits were obtained, later proved to be affected with the disease, the significance of the results of transmission experiments had ultimately to be interpreted with reserve. These experiments will therefore have to be repeated with rabbits, known to be free of the disease, housed under strict measures of isolation and fed on an adequately balanced diet containing a sufficiency of essential vitamins.

Regarding the differential diagnosis of this disease of rabbits, it may be interesting to quote two instances from the literature of diseases which affect rabbits of a similar age and exhibit the same absence of clinical signs except for a terminal emaciation. The first disease was observed by some American biologists in stock rabbits in which parent-offspring mating had been practised for several generations. A young doe from one litter showed symptoms of ataxia and rapidly lost condition until it died in a state of emaciation. The litter-mates throve normally and, when mated by the same parent-offspring system, produced litters two-thirds of which showed symptoms of the disease at 8 to 13 weeks of age. Results of investigation ultimately showed that the disease was due to a sublethal recessive character which was transmitted by simple Mendelian principles. The second disease has been described by research workers in the United States and in this country in the litters of does supplied with barely enough vitamin E to complete gestation successfully. It was characterised by successive attacks of muscular dystrophy with corresponding weight loss and complete recovery followed therapy with synthetic vitamin E. Until the problem of rabbit nutrition has been more thoroughly studied in relation to natural diseases of rabbits, the occurrence of this nutritional disease of rabbits should be regarded as quite possible, especially under war-time conditions of feeding. As far as the existence of a virus disease of rabbits is concerned, whilst experimental results are strongly suggestive, it is essential that an open mind be also kept on the subject until conclusive results have been obtained from carefully controlled transmission experiments on a larger scale than have been described.

Dr. W. P. Blount said that in connection with this last outbreak, recounted by Mr. Muir, he would like to draw attention to a small outbreak they themselves had had. In an indoor breeding establishment, with 120 does, the normal daily death-rate among the young was four, and in April this figure suddenly rose to 22. They made all possible enquiries, carrying out intraperitoneal inoculations from the excess abdominal fluid present in the young affected animals, but with negative results. There seemed to be no ascertainable cause until it was learned that the man in charge had used picked greenfood from a nearby field, instead of the customary issues. The Superintendent of Kew Gardens reported that the plants included dock, buttercup, wild parsnips—all poisons for rabbits. This source of greenfood having been eliminated, the deaths dropped to one or two per day. There were no symptoms other than paralysis and coma before death, nor were there any striking *post-mortem* findings, except in some cases kidney lesions, in which cases the urine was positive for albumin.

He would like to confirm Dr. Hare's opinion of the very widespread incidence of coccidiosis—the immense reaction that it had on rabbit diseases generally. In his view, neither sanitation nor hygiene influenced the incidence of coccidiosis very much. What the factor was that allowed it to become so dominant, apart from the spread from mother to young, stressed by Dr. Hare, he did not know.

He was somewhat amazed that Mr. Gordon found such a high incidence of tuberculosis. During the past year they had conducted hundreds of *post-mortem* examinations on rabbits and had not encountered one case of tuberculosis and only a few of pseudo-tuberculosis. One met with quite a large number of cases of rabbit syphilis, notably amongst the stock of certain breeders.

He would like to elicit from Dr. Bakker information on the following points: (1) What were his *post-mortem* findings in his cases of Listerellosis; (2) whether he had tried tenoban as opposed to kamala for taeniasis; (3) now that derris was not available, whether the use of ordinary flowers of sulphur was not as efficacious as any other common parasiticide for lice; (4) did Dr. Bakker advise the ordinary backyarder to rear poultry on the battery system; (5) had Dr. Bakker any practical points to give them in regard to the sexing of birds between the ages of 6 and 10 weeks.

The Replies

Dr. Bakker, who first replied to certain of the points raised by Mr. Blount, said that, in regard to the *post-mortem* findings in Listerellosis, he had passed to Dr. Hare a case in which on opening up the bird he had suspected the existence of that condition and he would ask Dr. Hare to speak to this point.

Dr. Hare said that, roughly speaking, the findings were the same as in the chronic form of pasteurellosis. A full bacteriological examination was called for. Multiple pin-point foci were found sometimes on the liver and sometimes on the pleura and even the body of the lung, but the most constant lesion was in the epicardium—a white lesion spreading along the course of the coronary arteries.

Dr. Bakker, resuming, said that he had not used tenoban, but that he had found nemural to give satisfactory results. In the treatment of lice he believed nicotine sulphate to be a very good agent, and since derris powder had become difficult to obtain they themselves had also used flowers of sulphur as a dust bath. They were prepared to recommend the battery system as far as the breeds of poultry were concerned: they had tried it for many breeds, but if he had to express an opinion where the battery system was in operation he would advise the breeder to have a cross between a light and a heavy breed.

As to the sexing of birds between the ages of 6 and 10 weeks, he could only say that if it was a question of separation of the sexes in different pens, he looked at the birds and made the best guess possible. If it was a question of selling or killing the cockerels, he called in an experienced poultry breeder, who did it for him, and also for members of the poultry club, as his own experience was not sufficient.

He came across many cases of six-month-old pullets that all turned out to be cockerels—that was one thing they must bear in mind when they were asked why the birds did not yet lay eggs.

Mr. Gordon had asked him a question on caecal worms. He thought it was wrong to take the attitude that any parasites were normal and that they should tolerate their presence, and when they had a good drug to deal with these pests they should try and clear the farm as much as possible. He had tried routine dosing with phenothiazine on a couple of turkey farms, and its effect on the general health of the birds had been excellent. On one poultry farm where conditions had been badly neglected, and with a very restricted area so that the runs could not be changed, they formerly managed to achieve success by worming the birds individually every three months; now, with phenothiazine at regular intervals in the mash, they had attained similar results.

Mr. Gordon said that he carried out many thousands of *post-mortem* examinations yearly, and he thought it somewhat rare to find caecal worms. He agreed that phenothiazine was very useful and that it was non-toxic.

DISEASES OF DAIRY CATTLE: SCOTTISH CONFERENCE

The scheme for the control of certain diseases of dairy cattle, as formulated by the National Veterinary Medical Association and approved by the Ministry of Agriculture, was discussed (reports *The Scotsman*) at a conference of dairy farmers and veterinary surgeons held at Craibstone experimental farm, near Aberdeen, on January 30th.

Sir John Boyd Orr stressed the value of milk in maintaining our working and fighting efficiency in the present national emergency. Largely owing to the increased consumption of milk, children and the poorer people were now healthier than they were before the war. By foresight and proper management, by making the most of the feeding-stuffs available, and, most important of all, by controlling and reducing diseases in dairy herds, milk production could not only be maintained, but considerably increased.

Mr. J. W. Burgess, Royal (Dick) Veterinary College, Edinburgh, advocated the scheme for the control of diseases among dairy cows, and pointed out the serious losses which they caused in money and milk. If the best was to be got out of this scheme, there should be close co-operation between the dairy farmers and the veterinary surgeons.

Mr. E. F. Hardwick, Ministry of Agriculture. estimated that diseases like mastitis, contagious abortion, and sterility cost Britain £20,000,000 yearly, while the loss per annum to milk production was fifty million gallons.

THE VETERINARY RECORD

February 13th, 1943

THE RECALLING OF THE LOVEDAY COMMITTEE

ELSEWHERE in this issue an announcement is made that the Committee on Veterinary Education which sat under the chairmanship of Dr. Thomas Loveday and which reported shortly before the outbreak of war, has been asked to review its recommendations in the light of the altered circumstances arising from the war and other causes, and that the Committee has acceded to this request.

We feel sure that our readers will welcome this announcement as indicative of the importance attached by Government to veterinary affairs and in particular veterinary education. There were, it is true, those who could not accept without demur some of the recommendations contained in the original report of the Committee. We believe nevertheless that we are right in stating that there was a general appreciation of the comprehensive and enlightened nature of the Committee's deliberations and a wide measure of agreement with many of its more important recommendations, and that the passage of time has strengthened this feeling.

The fundamental importance of education has been recognised through the ages and needs no further emphasis here. The subject has received unremitting and earnest attention from our own governing body. That it is also actively in the minds of the Council, N.V.M.A., is evident from past history and from the lively manner with which it was debated at the recent Special Meeting of Council to which we shall make reference at a later date. The fact that the meeting had to be adjourned owing to the numbers who still wished to speak, shows plainly the degree of interest aroused and the importance attached to the subject. It was also timely in a way which we did not then realise. For it is now clear that the profession will have an opportunity, through reports of its discussions or in evidence, of bringing its considered views to the notice of a Departmental Committee, on the revised recommendations of which —since it has been recalled in time of war—action may justifiably be expected.

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THE HEALTH OF LIVESTOCK

OUR retrospect of the Conference[1] would not be complete without referring to the discussions on "Preventive Medicine on the Farm."

Those of us who had read "Dutch Vet.", listened with special interest and sympathy to Dr. Bakker's opening paper. He, like Mr. Steele-Bodger who followed, had obviously had great experience of controlling disease on the farm. They each gave an address which contained valuable information, but the outstanding impression left was the remarkable similarity of outlook displayed by two men whose experience had been gained in different countries. Both speakers emphasised that the most important factor in disease control is the relationship between practitioner and farmer and both felt that something more than the old system by which the farmer is charged for each individual visit is needed.

There is a great need for educational work and propaganda amongst farmers particularly with a voluntary disease control scheme. "We have discovered, however, that with this type of disease (those dealt with by the Survey Committee) the most important factors in control are the *farmer and his man*, and the veterinary surgeons who obtained the best results in Holland were not necessarily the most clever in diagnosis or the most skilful in treatment but those who, through their enthusiasm, overcame the inertia of conservatism present on the farm and who had the knack and the patience first of all to interest and then to educate the farmer and his dairyman." Very similar views were also expressed by the Polish delegate, Colonel Stanislaw Wrocenski. The co-operative dairies, herd societies and insurance schemes which exist in Holland have done much to assist in the development of disease control methods very similar to those now being employed in this country. We were interested to learn that calf-hood vaccination against contagious abortion was extensively used in Holland and that all calves and young pigs were officially identified. This identification, combined with the efficient inspection at the slaughterhouses, each of which is directed by a veterinary surgeon, provides valuable information essential for the control of disease. The collection of such information is facilitated in Holland by the small number of centralised slaughterhouses.

Mr. Steele-Bodger also stressed the importance of good husbandry in all its aspects in the control of animal disease, the necessity of planning with vision and determination, of radical alteration in husbandry where required, and of close linkage between State service, practitioner and laboratory worker. He welcomed the greater enlightenment of the present-day farmer but emphasised the need for the veterinary profession to accommodate itself to this enlightened outlook and to tackle disease problems with all the knowledge and energy at its command. Whilst finding it difficult to visualise a comprehensive system of preventive medicine on the old fee basis he was emphatic that individuality and freedom to think, investigate, diagnose and treat must be preserved.

Dr. Lovell brought out the need for taking a balanced view of all the factors concerned in a disease and then attacking it at a vulnerable point. In infectious diseases it was important to recognise that the relative virulence and infectivity of a microbial agent was only one of the factors concerned; others included the susceptibility of the animal population, its density and distribution and the mode of transmission. Some diseases also were affected by climatic influences, others by the vegetation, or the nature and distribution of reservoirs of infection. He cited various examples and made a plea for the collection and recording by practitioners of epizoötiological data concerning the introduction and spread of the common diseases of domestic animals.

Points made by subsequent speakers included the need for greater emphasis on epizoötiology in our curricula, measures to encourage the keeping of self-contained herds, and thereby to reduce the movement of animals from farm to farm, the reduction of the lag between the acquisition of knowledge and its application, the sterilisation of swill, and the economic importance of the sub-clinical forms of parasitic infestation and the need to use anthelmintic remedies early in order to maintain health rather than to wait until clinical disease had appeared.

The discussion on meat inspection has been dealt with in a previous editorial, but is closely linked with the general problem of disease control. During the last war the American Expeditionary Force was much impressed by the efficiency of the R.A.V.C. and it is understood that the American Army Veterinary Corps was largely modelled on its British counter-

[1] *Vet. Rec.* **55**. 30.

part. We now see that the American service has developed an efficient and scientific system of food inspection to protect the health of the American Forces. We feel confident that with their example the R.A.V.C. will not be slow to grasp the importance of this side of their work. An efficient veterinary food inspection service is already in operation in the Middle East and similar developments in all the fighting forces would do much to hasten the day when civilian meat supplies are adequately inspected.

CLINICAL COMMUNICATION

Picrotoxin as an Antidote to Nembutal Poisoning

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Nembutal has been used for a considerable number of years as an anaesthetic for all manner of surgical manipulations. Although it is a fairly safe anaesthetic, one occasionally gets a fatality, and I would like to describe such an incident, and the successful outcome.

History.—The subject was a two-and-a-half-year-old Samoyed dog weighing 48 lb., in good bodily condition. The animal was suffering from a tumour-like growth on the side of the jaw.

Ten grs. of nembutal dissolved in 10 c.c. sterile water were given intravenously through the external saphenous vein. When about 8 c.c. of this solution had been given the animal suddenly collapsed and respirations ceased. The heart action continued and the pulse was fairly strong.

Treatment.—Artificial respiration was applied immediately and maintained for 15 to 20 minutes without any result. By this time the pulse had weakened considerably and the tongue was beginning to become cyanosed. 1½ c.c. of picrotoxin solution (Abbott) (3 mg. per c.c.) were now injected intravenously by the same route as previously. Ten minutes later a further 1½ c.c. were given intravenously and after a few seconds respirations were recommenced—at first very weak and irregular but gradually increasing in force. A further ten minutes were allowed to elapse before another 1½ c.c. picrotoxin solution were given intravenously. As a result there was a further improvement in the force of the pulse and the depth and regularity of the respirations, and the dog gradually returned to consciousness. Recovery was uneventful and the dog showed no ill effects from its experience.

Picrotoxin produces its effect by means of a stimulation of the medullary centre of the brain, with a resulting increase of respiratory rate, increase in blood pressure and a decrease in pulse rate.

Picrotoxin has been used successfully in human medicine as an antidote to all forms of barbiturate poisoning and as much as 600 mg. have been administered without untoward result.[1] Messrs. Abbott Laboratories recommend for use in veterinary practice ¾ to 1 c.c. of picrotoxin to counteract the effect of each 1 gr. dose of nembutal.

While realising the safety of nembutal anaesthesia, the need for an antidote is ever present and I have seen no reference to the use of picrotoxin in veterinary practice. Wright[2] mentions it as an antidote but states that he has not experienced its use in animals.

References

[1]Kohn, Platt and Saltman. (1938.) *J.A.M.A.* July 30th.
[2]Wright, "Veterinary Anaesthesia."

Weekly Wisdom

The new age will infallibly be a new age. It will be firmly rooted, let us hope, in our history; it will contain the familiar landmarks; but its characteristic problems will be new problems, and will only be disposed of by new solutions.

We have both to perceive clearly those forces already taking shape around us, which are the future in embryo, and to determine how, with the help of Providence, we shall best release, strengthen and enrich them in the years ahead.—Lord Elton, "St. George or the Dragon."

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An epidemic of fictitious values at the livestock sales should not obscure the fact that wise treatment—and hard living, too, maybe—has greatly built up the health of the herds. Among the best news of the past year was the launching of the veterinary "panel" to maintain our herds and flocks in vigorous health.—*Farmers' Weekly.*

IN PARLIAMENT

Commons Debate Artificial Insemination

In the House of Commons on February 4th Mr. R. Hudson, Minister of Agriculture, introduced the Agriculture (Miscellaneous Provisions) Bill, which was read a second time.

On Clause 16 the Minister said: This Clause deals with the control of artificial insemination. The announcement earlier in the year by the Agricultural Improvement Council of the setting-up of a Supervisory Committee to supervise field trials in artificial insemination at two experimental stations at Reading and Cambridge evoked a lively, but, I am afraid, premature, interest and stimulated a number of projects for the commercial development of this process. The object of these trials at Reading and Cambridge is to find out whether artificial insemination on a field scale in this country is practicable and economic. I am quite well aware that in Russia, for example, artificial insemination is being practised on a considerable scale, but I think hon. Members will agree that farming conditions in Russia are very different from those obtaining here. It is clear, or at least very probable, that artificial insemination holds great possibilities for good as far as livestock improvement in this country is concerned, but I think it is also clear that it contains great possibilities of evil if it gets into the hands of people who are going to exploit it purely commercially. Therefore, some system of control is necessary. What the exact system will be I cannot yet say, but this Clause is merely an enabling Clause which will enable me, after taking the best advice I can get, to make such regulations as seem desirable for controlling the sale and importation of semen of the particular animals mentioned in the Clause.

In debate, Mr. Lambert: With regard to artificial insemination, if this is to be of value it will be in counties where there are small herds. Devonshire is a county of small herds. A man may keep four, five or six cows; he is unable to keep a bull, and has to drive to a farmer who does keep a bull. Such a bull is very likely to be contaminated with disease. There have been in Devonshire outbreaks of sterility and abortion which have had a very damaging effect on the farmer's purse and on milk production. The Devon War Agricultural Committee, a very progressive body, wished to make an experiment, not of a commercial nature, in this matter, and they put forward a scheme to my right hon. Friend. Seale-Hayne Agricultural College, of which I have the honour to be chairman, supervised the experiment. It was a very carefully worked out scheme and was put to my right hon. Friend, but was turned down. They came to me and asked me about it, and I said: "What was the cost of your scheme?" When they said it would not cost more than £2,000, I groaned and said that such an amount to the Ministry of Agriculture was like an old lady's tip to a porter and that if they had put in for £20,000 the Ministry of Agriculture would have seen that there was something in it. I do not know the reason why the scheme was turned down, because artificial insemination would be of value in Devonshire, which is a country of small herds. The Ministry of Agriculture, like other Ministries, think that they are the sole fountain of wisdom, but I assure my right hon. Friend that there are some capable people in Devonshire and that they do know their own business. I am sorry that he did not allow us to go on with our experiment.

Mr. Wilfrid Roberts: I agree that this is a thing which has to be carefully controlled and that it must not be exploited commercially, because there are dangers in it. It appears to me, however, that the Minister and his Department are excessively cautious about it. I should be interested to hear why the scheme to which the right hon. Gentleman the Member for South Molton (Mr. Lambert) referred was turned down. It is true that the conditions in Russia are different from those in this country, but my information is that in Denmark, where the conditions are very similar, a great deal of work on artificial insemination has been done. There were before the war 85 centres in Denmark, covering probably hundreds of thousands of cattle. It cannot be said that Danish farming conditions are very different from those in England. In fact, the Danes seem to have gone ahead very briskly, and their methods of breeding and of dissemination of scientific knowledge have always been in some ways ahead of our own. I should have thought that by now, with the many millions of animals in the world which have been bred by these artificial methods, the scientific side of the matter had been thoroughly investigated and that the problem in this country was how to organise it in such a way as to suit our agricultural conditions. The main basis is agreed by the scientists concerned, and I believe that the system has immense possibilities for this country. In any case it is going on in other countries, and we should not be left behind.

The licensing of bulls has not had very spectacular results. It has not resulted in a very rapid improvement in the standard of livestock in this country. We have found out during the war that

the yields of many milk cows, to take one example, in this country are much lower than they should be. Breeding is only one way of improving that state of affairs. No doubt management is equally important, but undoubtedly there is an immense number of cows used for milk production which have not been specially bred for milk production of which the yield is poor, and there are many herds whose constitution is far from what it should be. Artificial insemination would be valuable for small farmers, because there are very few of them who can afford the best bulls. The dairying industry is an industry of small farmers. The objections to this method are partly that it is against nature. The practice of breeding, however, and most farm processes are alterations of natural processes or are a control of them. The fact that this is rather a new departure does not suggest to me that it is any more against nature than the breeding of cows with high milk records in the normal way.

Then there is the objection which comes from pedigree breeders. I notice that many breeding societies are suspicious of the whole process. One can naturally understand that those who attach some importance to their sales of pedigree bulls may look askance at this method, but that is not an objection which ought to weigh very strongly with the Ministry of Agriculture. If the scheme is worked well, I am sure that it will benefit the pedigree breeding societies.

Mr. Snadden : How will it benefit the cattle breeder ?

Mr. Roberts : There is an enormous number of cattle in this country which are non-pedigree and mongrels. Our pedigree cattle are very good, but there are a great many mongrels of a poor type which we could well replace with a much better class of cattle. If we get a higher standard of livestock in this country, that will benefit the pedigree breeders quite quickly. I look forward after the war to a steady grading-up of livestock, and I think that there is a great future for pedigree breeders. If more pedigree stock were kept, the pedigree breeder would sell more female animals, if not bulls. He would have an outlet there. If the breed societies take a rather short view, I am afraid they may easily lose a big opportunity. There will be a good demand from the Continent for good livestock, and this is one way in which this country can possibly develop an export trade. Let me put it this way, if they stick their toes in they may easily lose a market to other countries which are more progressive. There are dangers in these proposals, but as I see it they are mostly scientific dangers, and therefore I agree that the whole thing should be carefully controlled. At the same time there is a demand for it. I understand that the first scheme was started only eight weeks ago and that already 45 farmers are participating in it. Finally, I would say that I hope the Ministry of Agriculture will not be too cautious, too conservative, in administering this Clause of the Bill.

Mr. Snadden : We in Scotland are particularly interested in this process or practice, and it is an extraordinarily interesting and important practice from the point of view of the livestock industry. What does the Clause do ? It gives power to the Minister to make regulations for the control of the practice, for the licensing of distribution of semen and for control by licence of imports and exports of this material. I believe—the Minister will correct me if I am wrong—that the Minister has the power to enter into premises where licences have been granted. There is no doubt at all that revolutionary and far-reaching possibilities are opened up by this process. It would be quite wrong to assume that it is a new process. It has been going on for a century. I have used it locally in my own particular herd at home. But there is acute division of opinion throughout the whole country as to whether artificial insemination is necessary either economically or genetically. On the one hand, our scientists are urging the extension of this practice. They say it will avoid sterility. There is a certain amount of truth in that, because of the greater accuracy of the human hand as against nature's method. They also say that contagious abortion will be lessened, that it would help the small farmer who cannot afford first-rate sires, and—this is an important point, which was made by the hon. Member for North Cumberland (Mr. Roberts)—they say that in the post-war period the devastated countries will not be able to afford the price we would demand here for our pedigree stock, and that therefore we should export semen instead.

On the other hand, only one of our major Breed Societies in Great Britain—and this is without doubt the greatest livestock breeding country in the world—only one, and that particular society has very good reason for approving of it, as it is an importing society, desires an extension of the practice. Many competent practical authorities, including probably the best of our breeders—and some of the most expert of our breeders in the North—are keenly apprehensive lest disastrous results should ensue to our pedigree herds and flocks. We have to remember that we cannot have pedigree animals without a pedigree herd, and we must be careful that we do not kill the goose that lays the golden eggs. The source of supply is what we need to watch, not only in cattle, but in sheep.

I have exported animals to almost all the countries of the world who have in the past bought from us, including Soviet Russia, and I claim to know a little about this subject. I share the fears of the practical man on this question, but I do not take up an attitude of uncompromising resistance. I fear that if artificial insemination is generally introduced it will drastically reduce our bull population, as it will tend to concentrate the demand for semen at the top. If one wants artificially to inseminate a herd and you wish to get this material, one would not go to the man at the bottom, or even in the middle, but to the man at the top. The consequence will be that if the practice becomes universal, the demand will concentrate into the hands of a few, and the backbone of our pedigree herds, the smaller men who sell their bulls throughout the country to-day will be left standing. The consequence would be that there would be less outlet for bulls not suitable for pedigree herds. We should probably find our bull population of this country reduced to a very small number of really first-class animals. There is also the danger of excessive in-breeding leading to all-round deterioration.

If you have a champion bull, it does not necessarily follow in the slightest degree that he will throw the same calves every year. You get first-class calves this year, but next year when you look for them they are not there ; if they were the business would be simple. The second year you may experience a great falling off, which is the fascinating part of the business. If artificial insemination becomes universal with the exportation of large masses of material you may succeed in levelling down instead of up, because the purchasers may hit off one of those cycles of inferior stock getting. Putting aside all those arguments, one of the greatest problems of all will be the extreme difficulty experienced in safeguarding the authenticity and reliability of pedigrees. I will sum up this matter by saying that I feel that if this practice becomes universal or is extended it may well undermine our great pure bred structure in this country. Reference has been made to Denmark, and although I cannot speak about Denmark, I am not convinced. As regards Russia, there is no comparison there at all. What happened in Russia was that they wanted results quickly, and over vast distances. There was no danger of deterioration there because there was nothing to deteriorate. They wanted calves quickly, thousands of them, and no doubt it was a correct policy. You cannot compare Russia with this country.

Much as I dislike this uncalled-for interference with the normal functioning of nature, I believe that artificial insemination will in the long run, whether we like it or not, force itself upon us. I am sure that other countries will exploit it, and we must not be ostriches and put our heads in the sand. I do not think that it is wise to adopt a short-sighted policy of uncompromising resistance. We have to take a broad view. Having recognised that, what is the problem ? That we should devise as completely foolproof a scheme as possible. I would, therefore, ask the Minister to see that the strictest possible control is exercised not only at the location from which the material comes, the location of the sire but, just as important, at the location where fertilisation of the female stock takes place. If you control it at one end and not the other, the scheme will run amok. The Clauses in the Bill give the Minister sufficient power, and I have no criticism on that point, but I suggest that no matter what the report may be of the Committee appointed by the Agricultural Improvements Council—and I am a little suspicious of them—before we jump into this business, an official centre should be set up in Scotland where we can collect experience and data vital to this practice. For example, we do not know what the effect will be on future generations of animals where artificial insemination has been used. We might find something terrific happen with animals produced by this process. For these reasons I would ask the Scottish Minister to " gang warily " as we say in Scotland. We want, above all, to preserve the quality of our pedigree herds, and I think the Minister will appreciate that I am out to protect our great pure bred structure, built up over so many years with so much labour and with so much skill.

The Joint Under-Secretary of State for Scotland (Mr. Allan Chapman) : The House will have listened with great attention to the observations of my hon. Friend on the question of artificial insemination. Coming from one who has held the blue riband of cattle breeding, his words, like his prizewinners, if I may say so, carry a very proper weight. We have this question of control of artificial insemination very much in mind in Scotland. My hon. Friend, in voicing the anxieties of breeders, was at the same time maintaining his progressive outlook. It is possible that many breeders are not aware of the terms of Clause 16. I would point out how much the emphasis of the Clause is on control. It is easy to see how pedigree herds could be harmed if artificial insemination were left uncontrolled. Therefore, the views of the breed societies in Scotland are being, and will be, taken into full account.

A representative committee appointed by the Agricultural Improvement Council of Scotland has sat since November, considering

this matter very carefully, and although it has not yet reported I should be surprised if it did not wholeheartedly approve the terms of Clause 16. The chairman of this committee on artificial insemination, Major Brebner, is particularly qualified to preside over such a committee being chairman of the directors of the Highland and Agricultural Society, and also vice-chairman of the Aberdeen-Angus Society. The remaining members are representative of the National Farmers' Union and Chamber of Agriculture of Scotland, of veterinary science, of animal genetics, and of the Department of Agriculture for Scotland. I do not share my hon. Friend's suspicions about the attitude of veterinary science in this matter. I think that the knowledge and research which they bring will be valuable in enabling us to obtain the right kind of control. The first act of the committee was to invite the breed societies to put their views before the committee, and representations have been received from the Aberdeen-Angus, Ayrshire, Scottish Shorthorn Breeders, Galloway and the British Friesian Societies. Artificial insemination has been practised very little in Scotland, but I think my hon. Friend will agree that it is very desirable to establish control at a very early stage. I think he appreciates that the power to make regulations for Scotland will rest with my right hon. Friend the Secretary of State, but there will be the closest consultation with my right hon. Friend the Minister of Agriculture, in order to secure effective co-ordination. On the question of establishing a centre north of the Border, already, as my hon. Friend is aware, the field experiments alluded to by the Minister of Agriculture are taking place in the south. Whether such a centre should be established is a matter for careful consideration; also one does not know what the committee studying this matter may report. It is a point which I will bring to the notice of my right hon. Friend. I would like to give the most complete assurance that the Secretary of State will take all practical and reasonable steps to ensure that the pedigree breeds for which Scotland is justly famous, and which have been built up by such toil and expense, will not be imperilled.

Mr. Kirkwood: The hon. Member said that the special breeding of Scottish sheep is not going to be interfered with. Does that mean that the sheep in Shetland, which produce Shetland wool, which makes the finest tweed—a speciality in Shetland and the Western Isles—are not going to be crossed, in order to get quantity as against quality, because of war conditions?

Mr. Chapman: Among the other things which the Committee are considering, and on which they are receiving representations, is the question of sheep and horses. The breeding societies in Scotland are making representations, and my hon. Friend may rest assured that the sheep to which he has referred will not be in any danger. As far as sheep are concerned, the practice of artificial insemination if it comes is bound to be a very slow matter. The control regulations which it will be possible for my right hon. Friend to make will certainly protect anything of that kind in Scotland. In any case particular note will be taken of the point my hon. Friend has made.

Mr. Kirkwood: This is a serious point. I do not think the Under-Secretary follows me. The Shetland sheep produce much less wool than is produced by other sheep. At the moment, because of the war, there is a desire to get quantity as against quality. In order to get greater quantity from the Shetland sheep, the breed is to be crossed. If that happens the special wool from the Shetland sheep will never be produced again. It will be another definite injustice to Scotland if this breed goes entirely out of existence. I want an assurance that that is not going to happen.

Mr. Chapman: The whole point of control is to see that breeds are not destroyed. The anxiety which my hon. Friend the Member for West Perth has expressed on the cattle side, and my hon. Friend the Member for Dumbarton Burghs (Mr. Kirkwood) on the sheep side, is covered in Clause 16, which gives power to the Secretary of State to make Regulations, to see that the wrong things do not happen to these breeds. My hon. Friend can rest assured on that point. If he desires it, I will get into touch with him on the matter. The observations of both hon. Members will be fully considered. I am glad that the Bill has been welcomed, because it will assist Scottish farmers, who, like their colleagues elsewhere in these islands, are doing such a fine job in the national war effort.

Major York: The contribution of the hon. Member for West Perth (Mr. Snadden) opened my eyes, and, I think, those of other Members, to some of the dangers which undoubtedly may exist—I use the word "may" on purpose—for the pedigree herds and flocks of this country. I do not think it can be too strongly stressed that our pedigree herds will almost certainly be one of our greatest export commodities after the war. We have no indication at all of the long-term effect of artificial insemination. For all we know—and those of us who are always looking forward hope that it is so—there may be no deleterious effect, but scientific breeding—and by that I mean test tube breeding—has always had its dangers. I do not believe that in one or two generations we can learn anything about it. I caution owners of pedigree herds and the Ministry to take all possible care, and not to rush too readily into artificial insemination where pedigree herds are concerned. It is in the realm of the non-pedigree commercial herd that an improvement can be expected, and it is there that we require improvement, both in dairying cattle and in fattening cattle. I see in this a method of rapidly raising the standard and of providing the opportunity of making rapid progress in the elimination of disease. There are, I believe, sufficient, or nearly sufficient, safeguards against abuses, but I would ask my right hon. Friend to consider whether the keeping of records by the sellers would not be an additional safeguard which should be considered. I hope that he will look at that matter in that way. The hon. Member for West Perth was worried about the effect upon the men who sell bulls, but I am certain—and this was said by one hon. Member—that we cannot pay too much attention to one section of our industry if the schemes which are in mind are for the benefit of the whole of the industry and the country.

Mr. Granville: I desire only to ask the Minister one or two questions. The first is with regard to Clause 16, sub-section (2), which says with regard to artificial animal insemination:—

> "Regulations made under this section may apply to all or any of the following animals, that is to say, cattle, sheep, goats, swine, horses, domestic fowls, turkeys, geese and ducks."

Having waited so long for this Bill, I did think that we would have received a pronouncement from the Minister of Government policy in regard to this matter. But the Minister confined himself to a very brief statement. I was hoping he would tell us not only what is to happen at Cambridge and Reading with regard to the experiments being conducted there in artificial animal insemination, but I also hoped that he would give some lead to the agricultural industry as to what is the Government's intention and what is the policy of his own Department. As he knows, certain individuals in the country have spent a good deal of money, with great knowledge and interest, not from a commercial point of view, on some of these important experiments. The Minister did not tell us what will happen under the Bill about the experiments which have been undertaken by these private individuals, and I hope that the Parliamentary Secretary, when he comes to reply to the Debate, will give us some idea as to whether these people are to be allowed to continue the experiments for which they have sunk considerable sums of money—subject, of course, to control or licence by the Department—or whether they are to be forced to shut up shop and leave the experiments to the official stations at Cambridge and Reading.

Replying to the debate, The Joint Parliamentary Secretary to the Ministry of Agriculture (Mr. Tom Williams) said, on Clause 16: In referring to artificial insemination my hon. Friend (Mr. Roberts) suggested that my right hon. Friend ought not to be hesitant but that, if he is satisfied we are on the right horse, he should proceed fairly rapidly. Other hon. Members called for caution, hesitation and so forth, and thus automatically they cancelled each other out in such a way that, between them, they made a splendid case for Clause 16. It gives my right hon. Friend control over this experiment which has great possibilities for good but is fraught also with great possibilities for disaster if badly used. I can say that before any regulations are made breed societies will certainly be consulted. It is the object of the Ministry to carry the breed societies with them because of the doubts and fears about mismanagement of an extraordinary thing like this.

My hon. and gallant Friend the Member for Ripon (Major York) and my hon. Friend the Member for Eye (Mr. Granville) also referred to artificial insemination. Quite clearly this proposal is a delicate one and needs extremely careful handling. The only object of Clause 16 is to see that proper control is exercised in the interests of those who for many generations have won a splendid reputation for this country by the grand livestock which has been produced. I am sure that my right hon. Friend would be the last person in the world even to place that reputation in doubt, and that is why he asks for the power to exercise the control which is set up under Clause 16.

Mr. Granville asked what is to become of the private experiments which are taking place. All I can say is that we have two sets of buildings, one at Cambridge and one at Reading, where very careful experiments are proceeding, and on the results of those experiments my right hon. Friend will be able to take action. Private individuals who in the meantime undertake experiments or investigations will do so on their own, and one can say nothing more than that if, when positive results are available and action can be taken, they have been fortunate in their private experiments they will be able to join in the new activities. Beyond that I am afraid that it is impossible to go.

Questions

Animal Diseases

Mr. David Adams asked the Minister of Agriculture whether, as many sheep die annually from diseases for which preventive vaccines exist, all farmers are fully informed of these; and whether it is obligatory in the national interest to use these preventive methods?

Mr. Hudson: Information as to the use and value of sera and vaccine for preventing sheep diseases has been disseminated widely by veterinary surgeons, by the Press, and in all other available ways. Since last summer veterinary inspectors of my Department have been specially detailed for advisory work in hill sheep farming areas and to bring the value of preventive treatment to the attention of sheep owners. The answer to the last part of the Question is in the negative.

Mr. Adams: In view of the very large number of these animals which are lost each year, does the Minister not consider that he ought to take powers to make it compulsory for these preventive measures to be used?

Mr. Hudson: No, Sir. It would not be practicable to make them obligatory.

Mr. Wootton-Davies: Would the Minister consider supplying these vaccines free?

Mr. Adams asked the Minister of Agriculture whether he is satisfied that throughout the country adequate laboratory services are at the disposal of farmers and veterinary practitioners, so that diseases can be diagnosed and preventive measures adopted without delay?

Mr. Hudson: I am satisfied that the existing laboratory services are adequate for the present demand, but that there is ample scope for making greater use of laboratory services for diagnosis of animal diseases.

Mr. Adams: Is the Minister aware that certain Border farmers are complaining about the lack of the facilities to-day?

Mr. Hudson: No complaints have reached me.

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Milk (Pasteurisation)

Mr. Higgs asked the Parliamentary Secretary to the Ministry of Food whether, when the pasteurisation of raw milk is made compulsory, it is his intention to include tuberculin tested milk?

Mr. Mabane: I am sure my hon. Friend will appreciate that I should only be in a position to answer his Question if a decision of a general character such as he infers had been taken, which is not the case.

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Pasteurisation Plant, Buxton (Loan)

Dr. Summerskill asked the Minister of Health why the Buxton local authority was refused a grant towards a pasteurisation plant, in view of the fact that the medical advisers to his Ministry are of the opinion that the pasteurisation of milk would reduce the incidence of non-pulmonary tuberculosis?

Mr. E. Brown: The Buxton Town Council have not asked me for a grant, but they asked whether sanction would be given to a loan for the purpose mentioned. I am advised that there is no statutory authority under which the Council could establish such an undertaking, and the Council have been so informed. As the hon. Lady is aware, the question of securing the maximum supply of heat-treated milk is being fully explored.

Dr. Summerskill: Does the right hon. Gentleman intend to acquire powers in order to help those local authorities which are anxious to provide milk free from tuberculous infection?

Mr. Brown: I am in consultation on this matter with the Minister of Food.

Brigadier-General Clifton Brown: Does not my right hon. Friend realise that too much pasteurisation reduces the quality of the milk?

Mr. Purbrick: Are not the evils of pasteurisation far greater than its benefits?

Mr. David Adams: Does not the Minister consider the position highly inconsistent that he authorises large expenditure upon the cure of milk-borne diseases, whilst unable to agree to aid in the purchase of machinery for the prevention of these diseases?

Mr. Brown: There is no question of refusing a grant here.

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Tuberculosis, London (Death-Rate)

Mr. Douglas asked the Minister of Health whether his attention has been called to a statement by the County Medical Officer of Health for London that the death-rate from pulmonary tuberculosis in London rose from 0·64 in 1938 to 1·10 in 1941, and that the death-rate from non-pulmonary tuberculosis rose in the same period from 0·09 to 0·15, or an increase in the death-rate from all forms of tuberculosis from 0·73 to 1·25; and whether he has any statement to make on these figures?

Mr. E. Brown: Yes, Sir. On the second part of the Question I would refer my hon. Friend to my reply of November 26th last to his Question on this subject.

Mr. Douglas: Do not the figures show that the incidence of tuberculosis had risen very much more in London and the large towns than in the country? How does the Minister reconcile that with 90 per cent. pasteurisation of milk in London?

Mr. Brown: My hon. Friend is well aware of the reasons for the differences, which were in some part due to the change in the basis of classification owing to the international standard.

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Cattle (Grading System)

Major Thornton-Kemsley asked the Minister of Agriculture whether his attention has been called to the adverse effect of the inadequate payment for high-class beef on British breeds of beef cattle; and whether, in view of the importance of these breeds in the maintenance of our supremacy in stock-breeding, he will re-examine the present grading system in conjunction with the Ministry of Food?

Mr. Hudson: I have received representations in the sense suggested in the first part of the Question. The possibility of payment for fat cattle on the basis of quality in addition to killing out percentage has been discussed from time to time with my right hon. Friends the Secretary of State for Scotland and the Minister of Food, but the objections and difficulties are too serious to enable us to contemplate such a change under present conditions.

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Hill Cattle Subsidy (Scotland)

Mr. Snadden asked the Secretary of State for Scotland whether his attention has been directed to the disparity which has been permitted to occur in respect of the Government's schemes for the encouragement of the breeding of hill cattle in England and Scotland; and what steps he proposes to take in order to remove existing inequality of treatment?

The Secretary of State for Scotland (Mr. T. Johnston): There are differences between the two schemes, and it is difficult to say whether on balance the provisions and conditions of the Scottish scheme or of the English scheme are the more favourable. But I am discussing the matter with the Executive of the Scottish National Farmers' Union, and I will be glad also to have the benefit of the hon. Member's advice.

Mr. Snadden: Is the right hon. Gentleman aware that as things stand at present English buyers are able to come to Scotland and outbid Scottish farmers at our store sales because of the fact that under the Scottish scheme only breeding cows are eligible, whereas in England cows, steers and heifers may qualify?

Mr. Johnston: As I indicated in my answer, it is very difficult to say where the balance of advantages lies, but I shall be very glad to discuss the matter with my hon. Friend.

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Hill Sheep Farming (Inquiry)

Sir H. Morris-Jones asked the Minister of Agriculture what steps his Department is taking to diminish the losses in hill sheep through disease; and whether a research centre will be established in a hill sheep farming area in Wales to train veterinary experts and secure better liaison with the farmers in this branch of agriculture?

Mr. Hudson: Special attention to disease problems among hill sheep has, for many years, been devoted by veterinary investigation officers in England and Wales at those centres situated in the main hill sheep districts. Last summer a number of veterinary inspectors of my Department were specially detailed to undertake advisory work among hill sheep farmers for an indefinite period. A committee, under the chairmanship of Earl De La Warr, appointed by the Agricultural Improvement Council, is investigating the present position of hill and upland sheep farming in England and Wales, and has been asked to suggest measures of improvement. I understand that the committee is considering the question of the need for further research into hill sheep diseases. I cannot anticipate the findings of the committee, which, I hope, will report at an early date.

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Agriculture: Technical Development

Colonel Carver asked the Minister of Agriculture whether his Department will convene a conference of all those directly interested in the technical development of agriculture to arrange more effective means of bringing the results of research home to the practical farmer and so increasing the volume and efficiency of food production in Great Britain?

The Late Professor J. F. Craig, M.A., F.R.C.V.S., M.R.I.A.

A Further Personal Tribute

Mr. H. W. Steele-Bodger, M.R.C.V.S., of Tamworth, writes:—

Others have written eloquently and appreciatively of the late Professor J. F. Craig and none, I think, will disagree with any part of any tribute. I can think of no individual within the profession who will be more widely missed by all sections of the profession.

I have often asked myself—and never been able to supply the answer—whether Craig was a great 'research' worker with a clinical flair, or a great clinician with a flair for research. Certainly he was possessed of an encyclopaedic mind and for his years he had the most youthful outlook of any veterinarian I know. The length and breadth of his experience and the depth of his wisdom were unrivalled and this knowledge was, as has been said, always and unfailingly at the disposal of his colleagues—willingly and cheerfully given.

As I saw his remains being lowered into the grave the immensity of the loss that our profession has sustained was impressed upon me. It appeared a major tragedy that by death the source of all that wealth of knowledge and experience had gone for ever—and yet at the same time I had a feeling of thankfulness and gratitude that so much of it had been painstakingly recorded for future reference.

Many members of Council of the 'Royal College' are better qualified to speak of Craig's value to that body; those of us who perhaps have a 'nuisance value' on the Council may have served to emphasise his solid worth! The loss to that Council, particularly at this juncture, of his vast experience is a very serious one and probably only now that he is gone shall we be able to appreciate fully the logic of his contributions in committee.

During my period of office as President of the National Veterinary Medical Association, I found Craig a loyal friend and a wise counsellor. I am conscious how greatly the Survey Committee and in particular its present Chairman will miss the shrewd—and invariably constructive—criticism of one of its most valuable members. When he was unable to attend a meeting, I have never known Craig fail to send in his written observations on any report under discussion. It is a tribute to his foresight to observe that of the older graduates to whom I have given refresher tuition in pregnancy diagnosis and the treatment of infertility in the bovine, only those who had been his pupils at Dublin claimed to have received practical instruction in this subject.

Craig and I have, on many occasions, burned much midnight oil together, having a chat or a game of bridge. I shall miss him, but my loss must be small compared to those of his colleagues who, like Professor Wright and Dr. Davies, were so closely associated with him; as previously we envied them their good fortune so now in like measure they are deserving of our sympathy. Most of all we grieve for Mrs. Craig; only those who knew them best can realise the extent to which she leaned on 'Jim,' who was always the same—patient and wise, devoted and imperturbable, humorous, loyal and steadfast.

Lord Woolton believes in milk-recording of cows. He ought to ask the Government why they discouraged the practice when war broke out by withdrawing grants to voluntary societies. His plea for milk records is sound. "As a business man I always wanted to know the parts of my business that were yielding good results as distinct from those that just ticked over."—*Farming News.*

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Leicester F.U. urges that it should be made a liability on the part of owners to fence adequately yew and all poisonous trees and shrubs against cattle and other livestock.

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"Don't let the horse stand idle in the stable; use him and save your machinery and oil," said Mr. A. W. Doel at Chippenham F.U. meeting. "Farmers have become so tractor minded that they sometimes forget they have a horse in the stable."

Mr. Hudson: The establishment of the Agricultural Improvement Council and of the Ministry's Technical Development Committee, working in co-operation with the technical development sub-committees of county war agricultural executive committees, is intended to achieve the results desired by my hon. and gallant Friend, and I do not consider a further conference would serve any useful purpose.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Feb. 17th.—Meeting of the Section of Comparative Medicine of the Royal Society of Medicine, 1, Wimpole Street, W., 2.15 p.m.

Feb. 26th.—Annual General Meeting of the Lancashire Division, N.V.M.A., at Liverpool, 2.15 p.m.

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Committee on Veterinary Education: Recommendations to be Reviewed

It is announced jointly by the Ministry of Agriculture and the Department of Agriculture for Scotland that the Committee on Veterinary Education, under the chairmanship of Dr. T. Loveday, M.A., which reported to the Minister of Agriculture and the Secretary of State for Scotland about twelve months before the outbreak of war, has been asked by the Minister and the Secretary of State to review its recommendations in the light of the altered circumstances arising from the war and other causes. The Committee has agreed to undertake such review.

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STUDENT RESERVATIONS

From April 1st the reservation of veterinary surgeon students will apply to those who have been admitted, or accepted for admission, as students by a recognised veterinary college before they are 18.

The reservation of medical, dental and pharmacy students now applies only to those who fulfil the requirements of the schedule of reserved occupations before they are 18.

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PERSONAL

Appointment.—Mr. I. H. Pattison, M.R.C.V.S., has been appointed to the Colonial Veterinary Service as a Veterinary Research Officer in Palestine. Mr. Pattison has held a Colonial Veterinary Scholarship for five years.

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Marriage.—Wilson—Pollock.—At the Douglas Hotel, Glasgow, on January 30th, 1943, by the Rev. Wm. J. Auld, B.A., William Richmond Wilson, M.R.C.V.S., second son of Mr. and Mrs. John Wilson, Ashlea, 27, St. John Street, Coatbridge, to Elizabeth Lang Pollock, V.A.D., youngest daughter of Mr. and Mrs. Gavin Pollock, 15, Kirkhill Road, Gartcosh, Glasgow.

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R.C.V.S. OBITUARY

Davies, David James, Werngadno, Beulah, Newcastle Emlyn, Cards. Graduated London, July 14th, 1926. Died January 30th, 1943; aged 40 years.

Edmonds, Charles Robert, Ivy House, Sharnbrook, Bedford. Graduated London, May 22nd, 1891. Died January 25th, 1943; aged 73 years.

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Mr. David J. Davies, M.R.C.V.S.

It is with very great regret that we record the sudden death at the early age of 40 years, of Mr. D. J. Davies. Although young, he had a large agricultural practice and was extremely popular with his clients, his fellow practitioners and the Ministry's veterinary staff.

The funeral on February 3rd was the largest and most representative ever seen in the district. The South Wales Veterinary Association, of which he was a very active member, was represented by the President-Elect, Capt. W. Davies, Llandyssul. Other members of the profession present were Messrs. A. F. Butler, A. Parry, R. Dudlyke, G. J. Crawford, J. E. Thomas, E. P. M. Druett, J. McIlwaine and J. Smith, Mr. Davies's assistant. We extend sincere sympathy to Mr. Davies's aged father, sisters and brothers.

Mr. Charles R. Edmonds, M.R.C.V.S.

Mr. Charles Robert Edmonds, M.R.C.V.S., who was born at Martham, Norfolk, and was a well-known resident of Sharnbrook in Bedfordshire, had an adventurous career. He had lived in London, Norfolk and Johannesburg, and from there trekked by ox-waggon to Bulawayo, Southern Rhodesia, where he was one of the earlier settlers. Here he resided for over 30 years and for many years was the Assistant Chief Veterinary Surgeon for S. Rhodesia. He was the author of a well-known work, "Diseases of Animals in Tropical Countries."

Retiring from his profession, Mr. Edmonds settled in Sharnbrook in 1925. He is survived by his widow, before her marriage Miss Ann Teek, of Launcherley, Wells, Somerset, and three daughters, Mrs. Malcolm Gillies, Mrs. C. R. Dickinson, and Mrs. H. Graham, with whom much sympathy is felt in their loss.

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CAPT. LIONEL H. LESTER, M.R.C.V.S.

An Appreciation

In our issue of January 16th we published the notification of the death of Capt. Lionel Lester, together with a tribute. We have now received the following appreciation from Dr. J. Carmichael, Senior Veterinary Research Officer, Uganda, who writes: Lionel Lester, who was appointed Veterinary Officer to the British Military Mission in Abyssinia early in 1942, with the rank of Captain in the R.A.V.C., was killed on active service in December. He was shot by the Shifts or brigands who abound in that country. Those who knew him will appreciate that Lester's only regret would have been that his end had not come in actual battle with the enemy.

Lester was a student of the Royal Veterinary College, qualifying in July, 1934. He remained on at the College for some time as a house surgeon before going into private practice. After a period in Bechuanaland he came to Uganda in 1939, where his boisterous spirits and friendliness gained for him great popularity. He was a very practical man and could turn his hand to any type of work, but his ruling passion was surgery and it was a joy to watch him operate. Lester was a boxer of some experience and he hit a golf ball further than most people.

He was a grand companion and will be sorely missed by his many friends in Uganda and not least by those in the Entebbe Laboratory, where he worked for over a year.

Our great sympathy goes out to his wife, Prudence Lester, who is at present a member of the W.A.A.F. in Southern Rhodesia.

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GENERAL OBITUARY

Smith.—On January 30th, 1943, Muriel Dorothy (Dolly), beloved wife of Sam Smith, M.R.C.V.S., Winton Lodge, Horsham, Sussex.

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The sympathy of the profession and a wide circle of friends goes out to Mr. Sam Smith, M.R.C.V.S., of Horsham, in the death of his wife. A more cheerful, friendly and helpful personality could not be imagined; a deep sense of loss will be felt throughout a wide countryside.

The funeral was on February 2nd at Horsham Parish Church. In the large congregation were Messrs. Henry Taylor, H. Scott Dunn and H. S. Caldwell. Among the mass of floral tributes were wreaths from the Sussex Veterinary Society and many individual members of the profession.

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TRAFFIC IN UNSOUND MEAT

A striking commentary on the deterioration which, under wartime conditions, is taking place in the standard of meat from the point of view of public health is provided by the revelations which, as many of our readers will be aware, are being made through the local Press on the traffic in unsound meat stated to be prevalent in the Potteries. We reproduce below sections from the report in a recent issue of *The Staffordshire Sentinel*—which has taken the lead in ventilating this alleged scandal—of a meeting of the Stoke-on-Trent City Council, at which standing orders were suspended to enable the council to debate a motion for an enquiry.

Alderman Holdcroft, in moving, said that he had a mass of documentary evidence relating to this "filthy and abominable" traffic. The slaughterhouse managers were not the city meat inspectors, and it was wrong that they should be in a position to grade beasts higher. There should be a complete overhaul of the system of slaughterhouse management. The stuff that had been going through the city slaughterhouse was meat that the Ministry of Food had been paying 6d. a lb. for—stuff that should have gone to the knacker: the Town Clerk had stated that much of the meat that went to Nottingham was not fit for human consumption. He had a letter, dated January 28th, 1942, in which the Medical Officer of Health stated that the difficulty in the appointment of a whole-time veterinary officer lay in the fact that the Government had taken the inspection of cattle out of their hands.

Alderman Leason, seconding, paid tribute to the measures taken by the Chairman of the Health Committee, the M.O.H. and others as soon as they saw what was happening. If they had half a dozen veterinary surgeons they could not say the animals should not be slaughtered—all they could do would be to condemn the meat. To improve matters in this respect a new meat inspector had been appointed and he was convinced that he was a man of the right type, who did not intend that any more "slink" meat should be brought into the district. All they could do would be to instruct their inspectors to be ruthless in condemning meat. It was the Government who would have to take steps. It was a national question, for that type of meat should not be sold anywhere.

There was something wrong with the grading of meat. It was all very well to say that there was a grading committee to pick out the Grade "A," and put the older cattle into Grade "B," but he had not much faith in Grade "B": in a neighbouring area there was a side of meat which was awful. It was for the council to press the Government for an enquiry to stop the things that had been going on.

Alderman Walker made reference to the measures taken when it was found that the number of casualty beasts was rapidly on the increase and which resulted in their diminution, together with a proportionate increase in the number of animals condemned. The system was wrong which allowed outside people to send these cattle into the district in increasing numbers.

Another councillor said that cattle which did not come up to the grading percentage should not be allowed to be sold by auction as barren stores. The Ministry should make it compulsory that uneconomical cattle should be sent to the nearest centre for slaughter and inspection, and used only for the purposes for which they were fit.

Replying to the debate, Dr. Spark, the Chairman of the Health Committee, reviewed the factors in the city "which have led to the state of affairs where hundreds of unthrifty cattle have been brought from long distances to be slaughtered." He then read to the council a letter from the Area Meat and Livestock Officer of the Ministry of Food, stressing the necessity for the tightening up of the inspection of meat at the city slaughterhouse, this demand being based on the criticisms of Mr. Torrance, who visited the Stoke slaughterhouse and reported to him on the urgent need for drastic reform. Dr. Spark then said that the blame seemed to be "divided between the meat inspectors and non-co-operation by the slaughterhouse people." As a result of these representations by the Ministry, it was decided to appoint a senior meat inspector who would be "firm and ruthless in his condemnation of meat unfit for human food." His committee were determined that the so-called "slink" meat business should cease so far as that district was concerned. They were continuing their investigations so that, in addition to what was their responsibility—the inspection of meat and food—they might offer advice to the Ministries concerned as to what alterations and amendments should, in their opinion, be made to tighten things up all round.

After this statement by the Chairman of the Health Committee it was agreed to leave any question of an enquiry to that committee—a report to be given to the council—"but," comments the still dissatisfied *Staffordshire Sentinel*, "the traffickers in 'culls,' 'casualties,' 'screws,' barren stores and tuberculous animals have only been 'shooed' away. They will return. Nothing that the Corporation or the Ministries have done is in the least adequate to the gravely scandalous iniquitous occasion. The only one who comes out of it with credit is Mr. Torrance."

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THE DOMESTIC FLOCK: "HEALTH IS NORMAL"

The following extract is reproduced from a recently issued Domestic Poultry Keepers' Council *Bulletin* (Ministry of Agriculture): "One dead bird in the average domestic flock is a serious matter. But an epidemic affecting the entire flock is a major disaster. It is not always possible to go through the year without losing a bird; but do not regard one death as a bit of bad luck, for it may well be the first sign of major trouble ahead. There is always a reason for the abnormal death, for, after all, it is not normal for a bird to be ailing. To neglect to find out why it died is to run serious risks. Send the carcase to a reliable centre, where *post-mortem* work is carried out, such as the Ministry's Veterinary Laboratory, New Haw, Weybridge, Surrey. It may cost 3s., but it is money well spent if it means that the rest of the flock can be kept free from trouble. Many backyarders are doing this already, but they sometimes look on a negative report as a waste of money. If the veterinary surgeon reports that death was due to a physical derangement and not to an infectious disease, think how fortunate you are in not having the rest of your birds exposed to possible infection. The fee will have been well spent."

CONTROL OF DISEASES OF DAIRY CATTLE

STATEMENT SHOWING THE NUMBER OF UNDERTAKINGS NOTIFIED TO THE MINISTRY OF AGRICULTURE DURING THE MONTH OF JANUARY, 1943

County	Undertakings Notified		Total Undertakings		
	During Month	Previously	Number	Number of Cattle	
				Cows	Heifers
ENGLAND AND WALES					
Bedford	3	28	31	701	478
Berks	7	59	66	2,463	1,663
Bucks	6	44	50	1,296	898
Cambridge	—	14	14	249	118
Chester	21	309	330	11,076	3,805
Cornwall	—	4	4	68	73
Cumberland	6	28	34	911	785
Derby	21	188	209	6,413	3,638
Devon	12	103	115	2,023	1,189
Dorset	6	42	48	1,568	855
Durham	9	188	197	4,764	1,548
Essex	12	166	178	6,765	3,804
Gloucester	2	67	69	2,262	1,182
Hampshire	23	242	265	8,047	4,987
Hereford	—	20	20	365	205
Hertford	4	53	57	1,875	1,137
Hunts	1	7	8	280	196
Isle of Ely	—	1	1	1	8
Isle of Wight	2	9	11	226	97
Kent	9	87	96	2,000	1,122
Lancs	6	142	148	4,396	1,159
Leics	10	54	64	1,682	1,132
Lincs (Holland)	—	4	4	45	11
Lincs (Kesteven)	3	16	19	233	120
Lincs (Lindsey)	6	53	59	1,127	549
Middlesex	—	10	10	427	191
Norfolk	10	141	151	4,522	2,912
Northants	5	56	61	1,693	1,182
Northumberland	2	45	47	1,538	751
Notts	15	84	99	2,341	1,299
Oxford	3	26	29	824	798
Rutland	—	8	8	145	102
Salop	9	193	202	6,432	3,019
Soke of Peterborough	—	1	1	37	31
Somerset	9	105	114	3,183	1,323
Staffs	11	136	147	4,379	2,182
Suffolk, E.	7	65	72	1,808	1,376
Suffolk, W.	3	36	39	883	550
Surrey	7	92	99	2,751	1,287
Sussex, E.	12	134	146	3,988	2,237
Sussex, W.	6	87	93	2,463	1,502
Warwick	6	90	96	2,495	1,577
Westmorland	—	17	17	467	537
Wilts	6	52	58	2,497	1,138
Worcester	3	115	118	2,581	1,252
Yorks, E.R.	12	54	66	1,096	579
Yorks, N.R.	3	77	80	1,623	936
Yorks, W.R.	15	190	205	5,250	1,932
Anglesey	5	27	32	579	360
Brecon	—	3	3	50	22
Caernarvon	3	98	101	1,689	857
Cardigan	1	13	14	184	137
Carmarthen	5	163	168	3,103	1,546
Denbigh	3	45	48	961	498
Flint	3	85	88	1,999	882
Glamorgan	1	67	68	1,126	390
Merioneth	—	10	10	123	82
Monmouth	10	23	33	782	482
Montgomery	1	10	11	224	150
Pembroke	2	72	74	1,438	890
Radnor	—	—	—	—	—
TOTALS	347	4,358	4,705	126,517	65,757
SCOTLAND					
Aberdeen	1	17	18	858	285
Angus	4	13	17	659	232
Argyll	1	2	3	28	48
Ayr	6	31	37	1,354	1,109
Banff	1	1	2	103	20
Berwick	—	1	1	33	22
Bute	—	—	—	—	—
Caithness	—	—	—	—	—
Clackmannan	—	4	4	123	98
Dumfries	5	8	13	738	597
Dumbarton	—	3	3	105	86
East Lothian	1	5	6	184	94
Fife	5	12	17	698	449
Inverness	—	7	7	165	111
Kincardine	—	—	—	—	—
Kinross	1	2	3	68	29
Kirkcudbright	1	11	12	782	644
Lanark	6	8	14	484	391
Midlothian	—	1	1	44	69
Moray	—	—	—	—	—
Nairn	—	1	1	14	—
Orkney	—	—	—	—	—
Peebles	—	2	2	18	15
Perth	2	14	16	416	221
Renfrew	2	6	8	357	269
Ross-shire	1	3	4	128	72
Roxburgh	—	—	—	—	—
Selkirk	—	—	—	—	—
Stirling	8	17	25	726	540
Sutherland	—	2	2	74	60
West Lothian	1	—	1	23	18
Wigtown	4	22	26	1,928	1,111
Zetland	—	—	—	—	—
TOTALS	50	193	243	10,110	6,590

Note.—Of the total 4,705 undertakings notified to date, 1,245 are for 1 year, 297 are for 2 years and 3,163 are for 3 years.

Duration of Undertakings: 1 year, 69; 2 years, 19; 3 years, 155.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

* * * * *

THE NEW VETERINARY BILL

Sir,—Many of your readers will probably, like myself, have read Dr. Bullock's letter in reply to mine of January 23rd with relief, because it disposes of the rumours of a subsidiary veterinary course and a "Licentiate Degree," which have for so long circulated unchecked. It is good also to know that the profession is soon to see the text of the new Bill, and to learn how the Council of the R.C.V.S. proposes to deal with the problem of quackery—altogether the atmosphere seems healthier and clearer. Until the text of the Bill is available, little perhaps can be usefully said in respect to the letter of Mr. Hancock on the same theme. As Mr. Hancock assures us, and I fully accept the assurance, that his address to the Society of Veterinary Practitioners was prompted only by the rumours afloat, and these Dr. Bullock tells us never had any foundation in fact, we may surely consider them as safely dead and buried. How strong these rumours were, however, Mr. Hancock shows when he tells us of "certain quacks up and down the country putting up their plates," and of others informing their clients that "within a short time they will possess licences to practise issued by the R.C.V.S." Mr. Hancock further says that "strong colour was lent to the veracity of this rumour by a deplorable leakage on the part of someone." Since the said rumour never had any foundation in fact, it seems difficult to see what there was to "leak"—from inside or out—and "deliberate invention" would appear to be the more accurate description.

If the Council of the R.C.V.S. disclaims any intention of training sub-veterinary workers, and granting a Licentiate Degree, it is not so with Mr. Hancock. On the contrary, with much frankness and considerable detail, he strongly advocates both, and personally I would not dispute his claims to the originality of his views. These can only be fully studied in the report of his address in your issue of August 29th last, but at present and until we have the text of the Bill, it would seem futile and unwise to discuss their merits as a cure for the prevalent quackery. I would keep an open mind, but meanwhile would like to express the hope that the profession, and especially its practitioners and the rising generation of students, will give their minds to the implicit challenge contained in these views, and remembering that Mr. Hancock in his address says, "I believe it ought to be done, it can be done, and that eventually it will be done."

Yours faithfully,

Sandy Lane, E. P. EDWARDS.
Prestatyn.
February 2nd, 1943.

* * * * *

Sir,—

> "A special Committee has been engaged during the year in considering the preparation of a Bill to amend the Veterinary Surgeons Acts to provide for the prohibition of veterinary practice by unregistered persons. Such a measure would involve the placing on a separate list the names of unqualified men who could produce satisfactory evidence they they are and have been for a stipulated period engaged in giving surgical and medical treatment to animals as their principal means of livelihood. This is in accordance with precedent. The draft Bill, as prepared by the Special Committee, is under consideration by the Council."—(R.C.V.S. *Register*, 1942, p. 347.)

The above is what was notified to every member of the profession over a year ago, and many will be trying to reconcile this with such phrases as are used by one of your correspondents in referring to the proposed Bill.

When consideration comes, there will be those who prefer to remain as we are, like the doctors, and others who would follow the dentists, but, in the meantime, no useful purpose is being served by attributing unworthy motives to our governing body.

Yours faithfully,

23, Queen's Gate Gardens, THOMAS LISHMAN.
London, S.W.7.

* * * * *

FERTILITY AND INFERTILITY IN THE BOVINE

SIR,—I read Mr. Smythe's article with interest and fear that I must join with Mr. Gold who, according to the *Record*, took part in the discussion and "did not have very great respect for the author's opinions."

My experience agrees with that of Mr. Gold in that I have never noticed the remarkable power of the uterus to become erectile when stroked, and have been unable to observe the phenomenon in about 40 cows and heifers examined since reading this article.

I am most interested in hyperplasia of the uterus described by Mr. Smythe. Has he definite laboratory proof that these uteri are hyperplastic? I have met true hyperplasia of the uterus in trichomoniasis—but the most vivid clinical feature was the tense impression given on rectal examination. Can Mr. Smythe tell us how he diagnoses clinically where hyperplasia ends and endometritis begins? I should like Mr. Smythe to elaborate on this condition of hyperplasia associated with physiological causes and ovarian dysfunction or mineral deficiencies. He emphasises in one part that it occurs when the corpus luteum is retained and then proceeds to claim it can occur with other types of ovarian dysfunction which he does not specify.

On two occasions he remarks that his theory that this condition exists and is due to the causes enumerated will be "demonstrated later," but after careful perusal I find no satisfactory demonstration of the theory.

It would be interesting if Mr. Smythe would enumerate the authorities who have recorded fremitus in the middle uterine artery in conditions other than pregnancy.

I am most interested in "retained corpus luteum." I believe the condition to be extremely rare but agree that when it occurs oestrus will be absent. The oestrus cycle can and does go on—with maturation and rupture of the follicle and formation of a corpus luteum—but with visible signs of oestrus absent, particularly in the autumn and winter time. The corpus luteum found in the ovary in such cases is not "retained"—if periodic examinations were made it would be found to regress normally—but enucleation can and does, in a large proportion of cases, induce an intense visible oestrus within three to six days.

The Survey Committee did not advise the indiscriminate expression of the corpus luteum and, in fact, gave repeated warnings of the damage that could be inflicted by unskilled handling of the ovary and attempts to express corpora lutea at the wrong time.

Mr. Smythe mentions the use of oestrogenic hormones to bring about regression of the corpus luteum. In my experience return to fertile oestrus varies according to the stage of the oestrus cycle at which the injection is given—one usually has some semblance of oestrus in two to three days, which is not fertile—due apparently to direct action on the uterus—and then return to oestrus at varying periods afterwards: in some instances a lapse of time up to five to seven weeks may occur.

Mr. Smythe's remarkable statement that the importance of specific infection as a primary cause of sterility may in many cases have been unduly exaggerated, will not find many supporters.

In regard to contagious granular vaginitis, has he noticed that the condition he records disappears in pregnant cows about the fifth to seventh month of pregnancy, and reappears eight to ten weeks after parturition? I believe true contagious granular vaginitis to be rare and in an experience of 18 years I have never met it.

The section dealing with trichomoniasis interested me greatly. Has Mr. Smythe definite proof of his statement that he is aware that trichomonads may exist in the genital tract of cows which show no clinical evidence for months or even years? Mr. Rowson, who has "this feeling," admits he has no such proof. The attempt to incriminate *C. pyogenes* as the true causal factor has been frequently mooted but never substantiated. If one compares the clinical features of trichomonad and *C. pyogenes* infection of the uterus it is difficult to be decoyed by this particular "red herring."

Dr. Muriel Robertson's correspondence is interesting and confirms opinions recorded by me in *The Veterinary Record* in articles on this subject in February, 1937, and December, 1939. I was particularly interested, as she subscribed to the opinion I expressed and subsequently confirmed by microscopical examination, that infected cows can and do carry full-time calves, and are a source of infection in the absence of treatment.

In my experience discharge after service by an infected bull is "cloudy," not "milky." It is usually most profuse about three days before the cow manifests clinical symptoms of return to oestrus. In this discharge it is usually comparatively simple to demonstrate trichomonads but when and after oestrus is manifested it is increasingly difficult or impossible until oestrus is again approaching.

I disagree that a bull cannot be treated. In my experience trichomoniasis does not diminish the fertility of the bull, except perhaps in very old-standing cases. The infertility in the herd is due to the manifestation of the disease in the cows and heifers. In large outbreaks which have been very successfully cleaned up I have treated bulls and used them on treated animals giving the cows routine treatment *after subsequent normal parturition*. In this way blood lines have been conserved and the risk of extension of infection to clean bulls avoided. It is rightly pointed out that the control of this disease is wrapped up in the control of the infected cows and bulls, but Dr. Muriel Robertson does not appear to appreciate that this disease is not scheduled and that we as a profession have no authority which enables us to check the traffic in infected animals. When initially called in to an infected herd one will usually find some animals in an advanced state of pregnancy and these animals will subsequently calve down, but it is impossible to guarantee that the veterinary surgeon can always prevail upon the owner to retain the animals for "intelligent and consistent" treatment.

Mr. Smythe asks how one detects an infected bull. Abelein introduced a simple gadget for obtaining specimens from the prepuce for examination, consisting of a glass cylinder of sufficient bore to allow a brush to pass through it. This is introduced into the prepuce. The brush is then inserted and utilised to collect discharge, withdrawn into the tube and the tube withdrawn. I have utilised this method with success.

In a fairly extensive experience I have never yet seen clinical symptoms in the bull.

I would stress the value of stilboestrol in the treatment of trichomoniasis as an adjunct to uterine irrigation with iodine or iodine and lactic acid according to the case. I would also stress that in the hyperplastic condition accompanied by anoestrus, which occurs in trichomoniasis and which may be followed by spontaneous return to oestrus, *or* by pyometra, the uterine contents do not consist of pus but of mucilaginous discharge something like that voided from the vagina.

His observation that the effects of the injection of iodine into the uterus are due to its irritant action and not to its antiseptic value has, I believe, been generally appreciated and accepted for many years; the strength of the solution used is evidence of this fact. His contention that this irritation brings about reflex outpourings of gonadotrophic hormones is difficult to accept, since it does not appear to be supported by the changes produced in the uterus. When a uterine injection is given marked contraction occurs followed by hyperaemia, which persists for varying periods up to three days or more. The uterus conveys the impression given by the uterus in oestrus—that is under the influence of the oestrogenic hormone produced by the graafian follicle.

In other words, one might say that one induces a "false oestrogenic phase"—increased blood supply—accompanied by some desquamation of the surface epithelium of the endometrium, and marked contraction of the organ, all of which contribute to the general clearing up of any infection which may be present within the uterus.

I fail to see where the gonadotrophic hormones come in in this. There is no disturbance, in the vast majority of cases, with the oestrus cycle provided the corpus luteum is not expressed and I am quite certain one cannot induce this result by injection of "gonadotrophic hormones hypodermically" in a cow coming into normal oestrus. The danger associated with the injection of these hormones, except in very definite circumstances, has been stressed by Hammond, jun. and his collaborators and by Day.

I will not enter into detailed discussion on the treatments he outlines but would point out that in the treatment of endometritis and pyometra when the corpus luteum is expressed it has the object of inducing an intense oestrogenic phase at *short interval* by effective, sudden and complete elimination of progesterone. The fact that ovulation occurs is incidental. I emphasise again the danger of injecting gonadotrophic hormones—prolan "A," antuitrin "S" and pregnant mare serum—except in certain well-defined conditions of anoestrus.

Cross breeding or the occasional use of a bull bred for stamina *cannot affect* the fertility of the cow under treatment—provided the pure-bred bull of its own breed is fertile, there can be no different result. His suggestion of permitting a shorter lactation and a longer dry period is presumably associated with the possible effect of mineral deficiencies where they exist. The provision of suitable nutrition and mineral supplements obviates the suggestion which could have a disastrous effect on milk production if carried to extremes.

Incidentally, has he noticed the tendency for increased incidence of milk fever in cows which have long dry periods and the increased incidence of acute mastitis at parturition?

Why, if the effects of irrigation are due to stimulation of the gonadotrophic hormones by reflex action, does he prefer glycerine or sugar solution to "induce a flow of lymph"?

His advice regarding the injection of follicle stimulating hormones (gonadotrophic) in cases of retention of the corpus luteum, which he apparently meets very frequently, is contrary to accepted scientific knowledge and is to be deplored because of the harm such a procedure can bring about.

He mentioned prolan "A," antuitrin "S" and stilboestrol together; the first two are gonadotrophic hormones, as is pregnant

mare serum; stilboestrol is the synthetic oestrogenic hormone, and has quite a different action from the others.

He also recommends the injection of stilboestrol in the treatment of shy bullers, giving the injection two days before expected date of heat. This is hardly rational treatment since stilboestrol is probably the best contraceptive available to-day, given at the time he advises—that is within a day or two of oestrus in the cow. He does not give his readers any indication of how he fixes the date of "expected heat" in the shy buller.

Yours faithfully,
G. N. Gould.

. . . . . .

Sir,—In the past few months much has been written and spoken of sterility, but all the writers and speakers seem to concentrate on the curative aspect of the disease; no one mentions a probable cause, nor does anyone suggest a means of prevention. Furthermore, I would blame our experts for continually coupling this disease with contagious abortion. I consider that the two diseases have little connection and that they should be studied apart. Abortion has always been with us but sterility is comparatively new. Abortion is curable with live *Brucella*; but with sterility, while certainly we may relieve, surely no one can claim a permanent cure, with all our latest procedure. At the moment I can point to herds where abortion is rife but sterility is unknown, and again I can show herds where sterility is rife and abortion unknown. I consider that in my district to-day sterility is causing more loss to the farmer than abortion; year by year it gets worse and the most alarming feature is its spread amongst maiden heifers. Rarely a day passes but I am called upon to examine barren heifers and in the majority of cases I can find nothing abnormal about them. Of course I massage ovaries and resort to hormone therapy. I envy those gentlemen with the delicate touch who have reduced the manipulation of genital organs to a fine art. The important question to be answered is, "What is the cause or reason for all this sterility?" Nutrition has nothing to do with it as it had started before the war when food was plentiful. Of course the craze for milk has brought it more to our notice. Previous to that, many farmers who had heifers running with the bull all the summer had many that proved barren and just sent them off fat as they paid best in those days. I am suspicious that sterility first showed itself after Boutflour's method of "steaming up" dairy cows for heavy yields of milk became popular. Then the modern cowshed, with its water bowl, probably contributed. Finally, the worst blow of all, came the shout for winter milk, which means the complete upset of the normal cycle. Surely spring is the natural time for all young things to be born. The pig breeder will tell you that his spring litters are always bigger, stronger and less trouble to rear. The dog breeder will tell the same story. A client put the matter before me rather forcibly. He said, "For years you have been trying to turn the cow into a milking machine and now, with your insemination, you are turning her into an incubator." He added, "If you continue to shout for winter milk she soon will stop breeding altogether." I wonder if any of the older practitioners have noticed a great change when handling the genital organs of dairy cows. In ordinary calving labour pains are not nearly so severe nor so prolonged. Twenty to 30 years ago, when doing ordinary cleansing, it was almost always necessary to have a man holding the nose and pinching the spine to prevent heavy straining and often it was necessary to leave them to settle down. Nowadays the majority will never resist at all, even when roughly handled: even in eversion of the uterus many show little or no resistance. I do practise spinal anaesthesia, but it is more to prevent shock to the animal than to assist reduction. The normal calving is much more protracted than it used to be. Clients will tell you that cows have come to be much lazier than they used to be. A very common message to receive is that there is a cow calving but that she is not getting on with it. On examining, it is quite common to find everything straight and correct, but she has not got the calf forward and does not seem to be trying much. It is often difficult to decide whether to give more time, but I find, in many cases, that if you delay the calf dies before she gets it forward. Perhaps this atony of the uterus explains why metritis and "whites" do not respond to treatment as they once did.

Yours faithfully,
Wm. A. Campbell.

Boroughbridge, Yorks.
January 23rd, 1943.

. . . . . .

Sir,—It would seem that the occurrence or non-occurrence of fremitus in the pregnant animal which subsequently develops pyometra is probably a question of the time of examination of the animal. If a cow infected with *C. pyogenes*, for example, becomes pregnant and the foetus develops for the first four months in the normal way, then one naturally would expect to detect fremitus in the uterine artery, but suppose at this stage the membranes separate and death of the foetus takes place with resultant pyometra, at what stage does fremitus cease? Does it cease immediately the foetus dies, before the death of the foetus, or gradually after its death? If the first is the case the rule is hard and fast, but the second would give pregnancy without fremitus and the third pyometra with fremitus.

Yours faithfully,
L. E. Rowson.

22, Hill Road,
Cambridge,
February 5th, 1943.

. . . . . .

Sir,—The interests of lucidity and exactitude have been well served by the letter of Mr. J. G. Murray in your issue of January 30th. A clinician of the reputation of Mr. R. H. Smythe must be presumed to be speaking *ex cathedra* on this occasion, and the disappointment expressed by Mr. Murray at the publication of so many erroneous and nebulous statements must be shared by all interested in the subject. Or can it be possible that Mr. Smythe has again, clothed in motley and carrying the cap and bells, launched a "ballon d'essai" to stimulate dull minds after the mode of his letter of March 21st?

I am, Sir,
Yours faithfully,
F. R. Roche-Kelly.

Kent Farm,
Pontrug,
Caernarvon.
February 1st, 1943.

. . . . . .

Sir,—We have seen to-day, in this practice, the result of putting the "production target" a shade too high, in the progeny of a 6 or 7-years-old Shorthorn cow and a Shorthorn bull—three heifer calves born a few days before their expected time, but all unfortunately dead at or soon after birth. They were normally developed and fair sized, estimated at 50 to 55 lb. in weight each. They were marked similarly but not exactly alike; red calves, each with a star, with white hinds up to the hocks, white briskets and abdomen and tails and front coronets, and two also had white patches on withers and backs. The birth of the last one only was seen by the owner, but it was thought that one of the others may have lived after birth.

The dam of these triplets had, as might be expected, retained the foetal membranes.

Yours faithfully,
E. G. Conisbee.

Axminster,
Devon.
February 2nd, 1943.

* * * * *

Sir,—I am greatly indebted to Mr. J. G. Murray for his letter under the above heading in your issue of January 30th. I am very flattered when I note that the writer, with his undoubted flair for criticism, is only able to detect eight errors in a paper covering such a very wide range and I feel sure this must compare favourably with the margin of error present in the majority of the more lengthy papers published in your journal. I appreciate, however, that in another twenty years a very great deal more of what I have written will have been shown to be wrong and the same may apply to some of Mr. Murray's corrections, at an even earlier date. The one point about which Mr. Murray and myself are in complete agreement is our complete disagreement regarding certain matters under discussion.

I do not propose to query his statements concerning the diagnosis of pregnancy at 6 to 8 weeks, the existence or otherwise of corpus luteum persistens or the detection of pulsation in the uterine arteries, because I am fully conscious that my own knowledge is limited, being based only upon the practical observations of a mere 33 years, and I do not consider that any worker is qualified to be dogmatic without at least 50 years' experience behind him. But, even though Mr. Murray is right in asserting that pulsation is normally present in the uterine arteries of non-pregnant females, I should suspect that his imagination had outrun his credibility if, with his hand in the rectum of a non-pregnant Jersey heifer, he were to assure me that he could actually detect it.

It is also unsound criticism to quote a sentence without its context. Hence, when Mr. Murray extracts the sentence, "the fallopian tube runs along the free border of the pouch," he contradicts that statement, whereas if he were to continue with the text, "in the form of an arc, with the concavity extending away from the centre of the free edge," he would not only be correctly quoting the author but would be accurately describing the anatomical feature.

I am sorry that I still cannot be as dogmatic as Mr. Murray would wish regarding the pathogenicity of trichomonas. I can only

repeat that I am hampered by the consciousness that a great deal of what each of us, including my critic, writes to-day will seem merely amusing if we are able to refer back to it in 20 years' time.

Yours faithfully,

Vean House, R. H. Smythe.
Camborne.
February 1st, 1943.

* * * * *

DANGER OF RE-INTRODUCTION OF RABIES FROM ABROAD

Sir,—I have been interested in the correspondence concerning rabies. It is a matter which causes grave concern to anyone interested in dogs. I have no knowledge of the allegations contained in Mr. Johns' letter of January 23rd, but it is apparently possible that what occurred in 1918 and 1919 could occur again.

It is not perhaps generally known that the Ministry of Agriculture and the League worked in co-operation in helping men to bring back dogs from abroad, by placing them in quarantine free in necessitous cases. Perhaps, if through your pages this were more generally known, it might obviate a possible risk. When the men returned from Dunkirk, the Ministry telephoned the League and many dogs were cared for under these arrangements at the Blue Cross Kennels.

The League is willing to increase or extend these facilities, not only to prevent rabies, but to assist the men with their animals.

Yours faithfully,

E. Keith Robinson,
Secretary.

Our Dumb Friends' League,
Grosvenor House Gardens,
Victoria,
London, S.W.1.
January 25th, 1943.

* * * * *

BEET PULP FOR HORSES

Sir,—From experience most of us will quite agree with Mr. Collingwood Alley's remarks on beet pulp for horses. Fed dry, it is dangerous either in admixture or *per se*: I have not met with many cases of gastric impaction, but choke is fairly common and very troublesome, with a tendency to pneumonia of traumatic origin. Lavage by stomach tube needs care. It sometimes dislodges appreciable amounts of pulp but the danger of loosened particles entering the trachea is rather increased. Lang's salt solution is recommended. The suggestion that arecoline should be pushed is informative, but probably through a wholesome fear of this powerful and distinctly poisonous drug we may not have been courageous enough. Stilboestrol or the cholines would also possibly suggest themselves. Cattle and sheep seem to consume dry pulp with impunity though occasional derangement has been met with.

For cattle I found a mixture of beet pulp, rolled oats and plenty of clean wheaten chaff, all well tossed together, an excellent feed. It is clean and easy to handle and can be fed wet or dry with or without pulped roots. It keeps well, the pulp does not cake or the oats become pindy, and the big bulk looks comforting in a barn or loft. It is assumed that the inner pericle of the wheaten chaff contains a modicum of food value akin to bran as well as escaped wheaten grains; anyhow, it seems to deserve a better fate than that usually meted out to it in Ireland—the match.

Yours faithfully,

C. P. Hynes.

Lismore,
Co. Waterford.

* * * * *

"INTERESTING MILK FEVER CASES"

Sir,—Mr. A. O'Neill's clinical communication under the above heading prompts me to record one case encountered by me in Hampshire in the summer of 1937, when I was assistant to Messrs. Tutt, of Winchester.

A red Shorthorn heifer, about six months in-calf with her first calf, was found lying in a field in a state of extreme coma—the degree of which can be judged when one states that flies crawling on the eyeball did not produce a reflex of the eyelids.

Treatment, after careful examination, consisted in administering 2 oz. of calcium boro-gluconate intravenously and 2 oz. subcutaneously. A very guarded prognosis was given.

The owner reported that within three-quarters of an hour she was up and grazing.

Yours faithfully,

A. S. Harris.

16, Bede Road,
Barnard Castle,
Co. Durham.
January 24th, 1943.

LEAD POISONING OF CATTLE FROM SALVAGED GROUND-NUT FOODSTUFFS

Sir,—I was most interested in the letter from Mr. Orr, which appeared in your issue of January 30th, on the subject of lead-contaminated ground-nuts salvaged from blitzed stores, and would like to add my confirmation of his findings.

One of my clients fed similar material to that described to two groups of cattle, one of dairy cattle, another of fattening bullocks, with a view to finding its potentialities prior to ordering larger stocks of this coupon-free feed. The animals in both groups received one to two pounds daily per head.

The first animal to be affected was a cow, seen by my partner, Mr. Lindsay Auchterlonie, and showing blindness and anorexia. As no improvement took place it was slaughtered after two days and nothing more was heard until ten days or so later, when the farmer 'phoned to say that he had four or five more cases.

On examination these were quite blind and showed the loss of control of tongue and jaws mentioned by Mr. Orr—when attempting to eat hay they could only chew vaguely and form a "rope" on the bars of the mouth. Four of these—bullocks—were slaughtered and passed for food, and the cow (fifth case) was kept and gradually recovered completely. Several other bullocks seemed highly nervous and the affected animals showed a tendency to wander aimlessly about almost unceasingly.

Dr. Hare found ¼-grain of lead per oz. in a sample of the ground-nut sent to him.

An interesting point was that the material was invoiced to the farmer as "manure" and that he was charged £12 10s. per ton—surely a high price for manure. He was verbally assured by the dealer that it was quite fit for food.

Yours faithfully,

65, Ilkerton Road, F. T. Williams.
Nottingham.
February 2nd, 1943.

* * * * *

"APPOINTMENTS VACANT": A COMPLAINT

Sir,—When answering advertisements for assistants in *The Veterinary Record*, I have been accustomed to enclose a stamped and addressed envelope in which, with the minimum of labour, a reply or copies of references might be returned: might, but with regrettable lack of professional courtesy (or perhaps mere impecuniosity) seldom are. One assumes, after a lapse of a few weeks, that these posts have been filled, though acknowledgments to that effect seldom appear even in *The Veterinary Record*.

In my limited experience, attention to many such trivialities has seemed unnecessarily subjugated to time in the hustle of general practice; but perhaps if *The Veterinary Record* made available a small column, free of charge, on the following lines, it might encourage replies. The financial loss would be very modest. I suggest a heading, "These posts are now filled," followed by "Box numbers 200, 201, 203, etc., etc."

A brief note to *The Veterinary Record* that such a post was now filled would then automatically result in an insertion as above.

In the meantime, I hopefully await a bulky mail—my references with (to save paper) "post filled" pencilled across the back.

Yours faithfully,

39, Melrose Road, Ivan Fincham.
Southfields, S.W.18.
January 17th, 1943.

. . . . .

Sir,—I have replied to at least fourteen advertisements in the "Appointments Vacant" column of *The Veterinary Record* since the beginning of last December, and to at least eight of these I have sent stamped addressed envelopes to which I have not received a single reply.

It would not be unreasonable to expect a reply, considering that it has been already paid for, and there would be no necessity for the member to disclose his or her identity by signing the reply; just the box number would be sufficient.

I would be most grateful, and I am sure many others too, if you could bring out this point in your much esteemed paper.

Thanking you.

Yours faithfully,

47, Corn Street, P. C. Creagh.
Witney,
Oxon.
January 30th, 1943.

[Deeming the complaint voiced by our correspondents to be well founded, we propose to take such steps as are in our power to remedy matters by adopting, forthwith, the suggestion that notification be made, gratis, in our "Appointments Vacant" column, on receipt of intimation that a post, previously advertised, is filled.—*Editor.*]